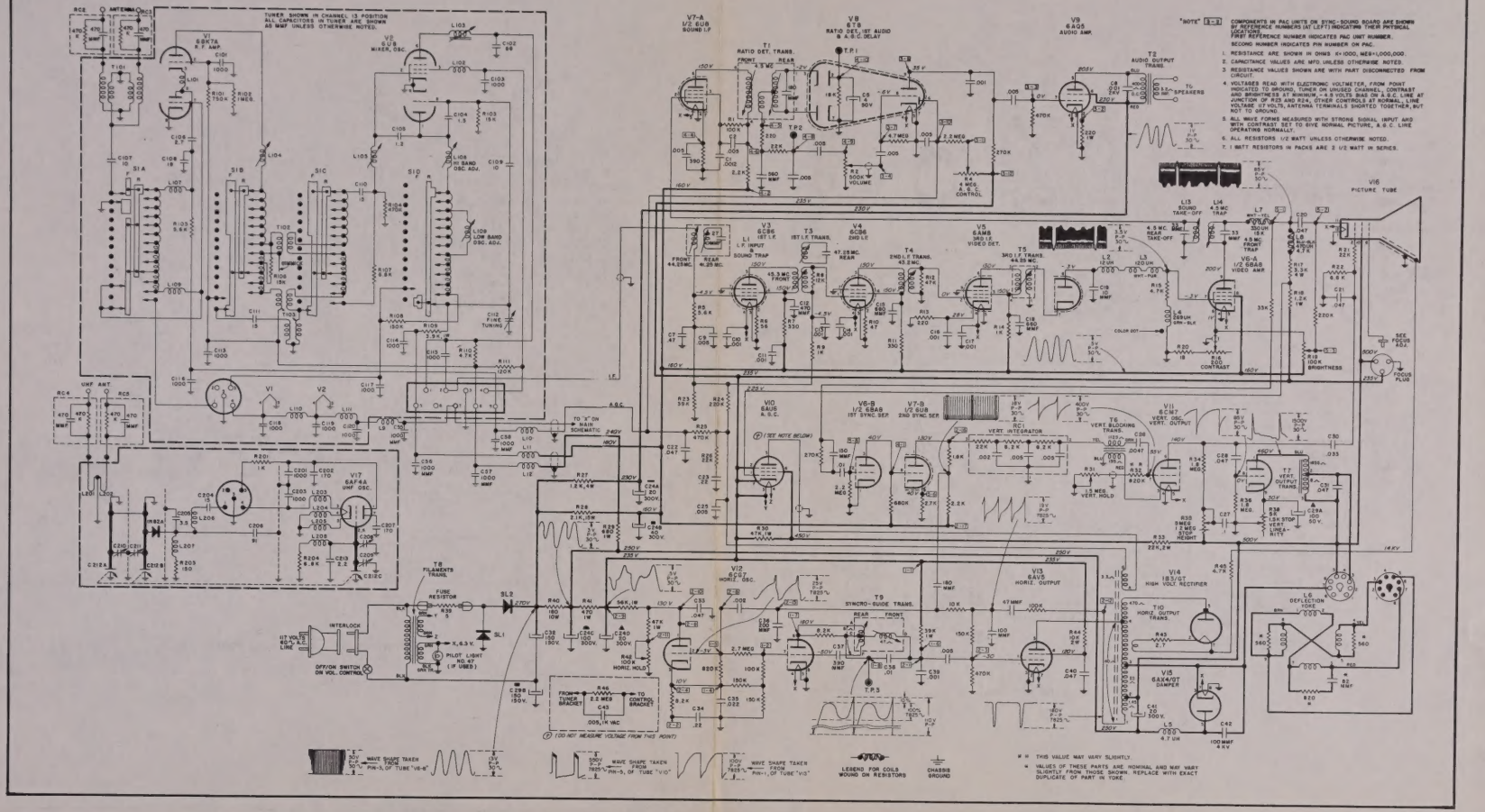
The PHOTOFACT Servicer

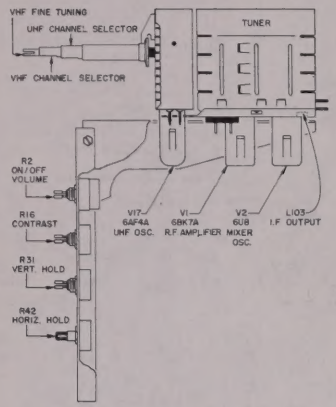
SET 394 ★ Published for all users of Howard W. Sams' Photofact Folders ★ APRIL 1, 1958

SILVERTONE CHASSIS 528.51050 (MODELS 7115, 7117, 7121, 7123, 7125, 7129, 7131, 7137, 7173, 7191

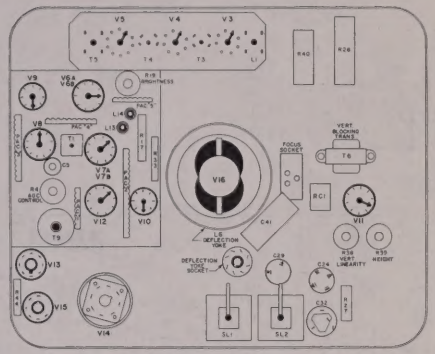
SCHEMATIC DIAGRAM COURTESY SEARS, ROEBUCK AND COMPANY


TUNER SHOWN IN CHANNEL 13 POSITION. ALL CAPACITORS IN TUNER ARE SHOWN AS MMF UNLESS OTHERWISE NOTED.
ANTENNA
V1 6BK7A R.F. AMP.
V2 6U8 MIXER, OSC.
V17 6AF4A UHF OSC.
V3 6CB6 1ST I.F.
V4 6CB6 2ND I.F.
V5 6AM8 3RD I.F. VIDEO DET.
V6-A 1/2 6BA8 VIDEO AMP.
V6-B 1/2 6BA8 1ST SYNC. SEP.
V7-A 1/2 6U8 SOUND I.F.
V7-B 1/2 6U8 2ND SYNC. SEP.
V8 6T8 RATIO DET., 1ST AUDIO & A.G.C. DELAY
V9 6AQ5 AUDIO AMP.
V10 6AU8 A.G.C.
V11 6BC7 VERT. OSC., VERT. OUTPUT
V12 6CG7 HORIZ. OSC.
V13 6AV5 HORIZ. OUTPUT
V14 1B3/GT HIGH VOLT. RECTIFIER
V15 6AX4/GT DAMPER
V16 PICTURE TUBE
T1 RATIO DET. TRANS.
T2 AUDIO OUTPUT TRANS.
T3 1ST I.F. TRANS.
T4 2ND I.F. TRANS.
T5 3RD I.F. TRANS.
T6 VERT. BLOCKING TRANS.
T7 VERT. OUTPUT TRANS.
T8 FILAMENTS TRANS.
T9 SYNCRO-GUIDE TRANS.
T10 HORIZ. OUTPUT TRANS.
L1 I.F. INPUT SOUND TRAP
L2 I.F. PEAKING
L3 SOUND TAKE-OFF
L4 4.5 MC TRAP
L5 I.F. PEAKING
L6 DEFLECTION YOKE
L7 4.5 MC FRONT TRAP
L8 I.F. PEAKING
L9 I.F. PEAKING
RC1 VERT. INTEGRATOR
R1 RATIO DET. BALANCE
R2 500K VOLUME
R3 4 MEG. A.G.C. CONTROL
R4 100K BRIGHTNESS
R5 100K CONTRAST
R6 1.2 MEG VERT. HOLD
R7 HORIZ. HOLD
R8 VERT. LINEARITY
R9 HEIGHT
R10 HORIZ. OUTPUT GRID
R11 HORIZ. OUTPUT PLATE
R12 HORIZ. OUTPUT CATHODE
R13 HORIZ. OUTPUT SCREEN
R14 HORIZ. OUTPUT DAMPER
R15 HORIZ. OUTPUT DAMPER
R16 HORIZ. OUTPUT DAMPER
R17 HORIZ. OUTPUT DAMPER
R18 HORIZ. OUTPUT DAMPER
R19 HORIZ. OUTPUT DAMPER
R20 HORIZ. OUTPUT DAMPER
R21 HORIZ. OUTPUT DAMPER
R22 HORIZ. OUTPUT DAMPER
R23 HORIZ. OUTPUT DAMPER

The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

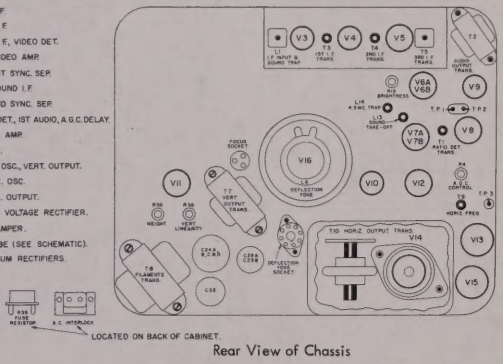


Top View of Tuner and Control Panel

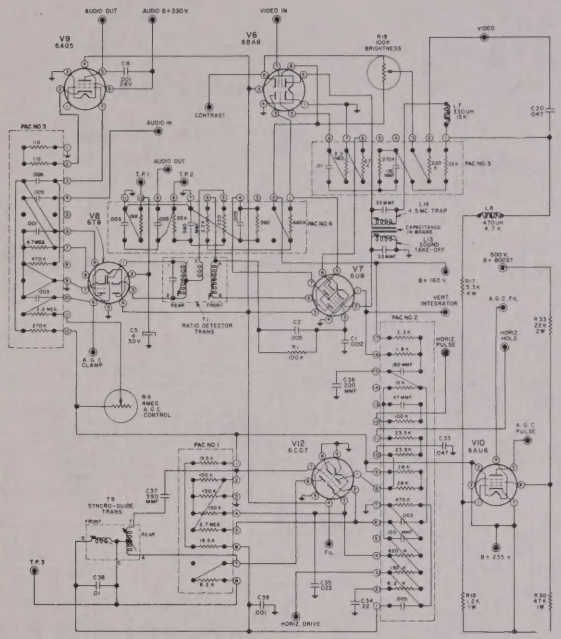


Front View of Chassis

V3, 6CB6 - 1ST I.F.
V4, 6CB6 - 2ND I.F.
V5, 6AM8 - 3RD I.F., VIDEO DET.
V6A, 1/2 6BA8 - VIDEO AMP.
V6B, 1/2 6BA8 - 1ST SYNC. SEP.
V7A, 1/2 6U8 - SOUND I.F.
V7B, 1/2 6U8 - 2ND SYNC. SEP.
V8, 6T8 - RATIO DET., 1ST AUDIO, A.G.C. DELAY.
V9, 6AQ5 - AUDIO AMP.
V10, 6AU6 - A.G.C.
V11, 6CM7 - VERT. OSC., VERT. OUTPUT.
V12, 6CG7 - HORIZ. OSC.
V13, 6AV5 - HORIZ. OUTPUT.
V14, 1B3/GT - HIGH VOLTAGE RECTIFIER.
V15, 6AX4/GT - DAMPER.
V16, PICTURE TUBE (SEE SCHEMATIC).
SL1, SL2, SELENIUM RECTIFIERS.



Rear View of Chassis



Wiring Diagram of Sync-Sound Board

DISASSEMBLY INSTRUCTIONS

MODEL T21E21 (CH 16J1 & 8G1)

CHASSIS REMOVAL

1. Remove 9 metal screws holding the rear cover and remove the rear cover.
2. On some models it will be necessary to remove the push-on type knobs at the top of the set, the screws holding the control panel well and the control panel.
3. Remove the speaker leads.
4. Remove 2 metal screws holding the AC interlock.
5. Remove 1 metal screw holding the remote tuning chassis brace, if set is so equipped.
6. Remove 4 metal screws holding the side chassis rails to the rear of the cabinet.
7. Remove the chassis from the front of the cabinet.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Admiral	MODELS	CHASSIS
		TA21E21, TA21E22, TA21E23	16AB1
			16AB1C
		CA21E12, CA21E13, CA21E14	16AD1
			16AD1C
		CA21E12, CA21E13, CA21E14, CA21E22, CA21E23, CA21E24, LA21E22, LA21E23	16AE1
			16AE1C
		TA21E1, TA21E2, TA21E3	16AG1
			16AG1C
		CA21E2, CA21E3	16AL1
			16AL1C
		T21E21, T21E22, T21E23	16B1
			16B1C
		C21E12, C21E13, C21E14	16D1
			16D1C
		C21E12, C21E13, C21E14, C21E16, C21E17, C21E22, C21E23, C21E24, L21E22, L21E23	16E1
			16E1C
		T21E1, T21E2, T21E3	16G1
			16G1C
		TR21E21, TR21E22, TR21E23	16J1
			16J1C
		CR21E12, CR21E13, CR21E14	16K1
			16K1C
		C21E2, C21E3, C21E6, C21E7	16L1
			16L1C
		Remote Control Unit	8G1

MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	Television Receiver With Remote Control
TUBES	TV - Sixteen Remote Control - Eight
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING Manual Tuning 160 Watts, 1.4 Amp. @ 117 Volts AC Remote Tuning 195 Watts, 1.8 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

ADMIRAL CHASSIS 16AB1, C, 16AD1, C, 16AE1, C, 16AG1, C, 16AL1, C, 16B1, C, 16D1, C, 16E1, C, 16G1, C, 16J1, C, 16K1, C, 16L1, C

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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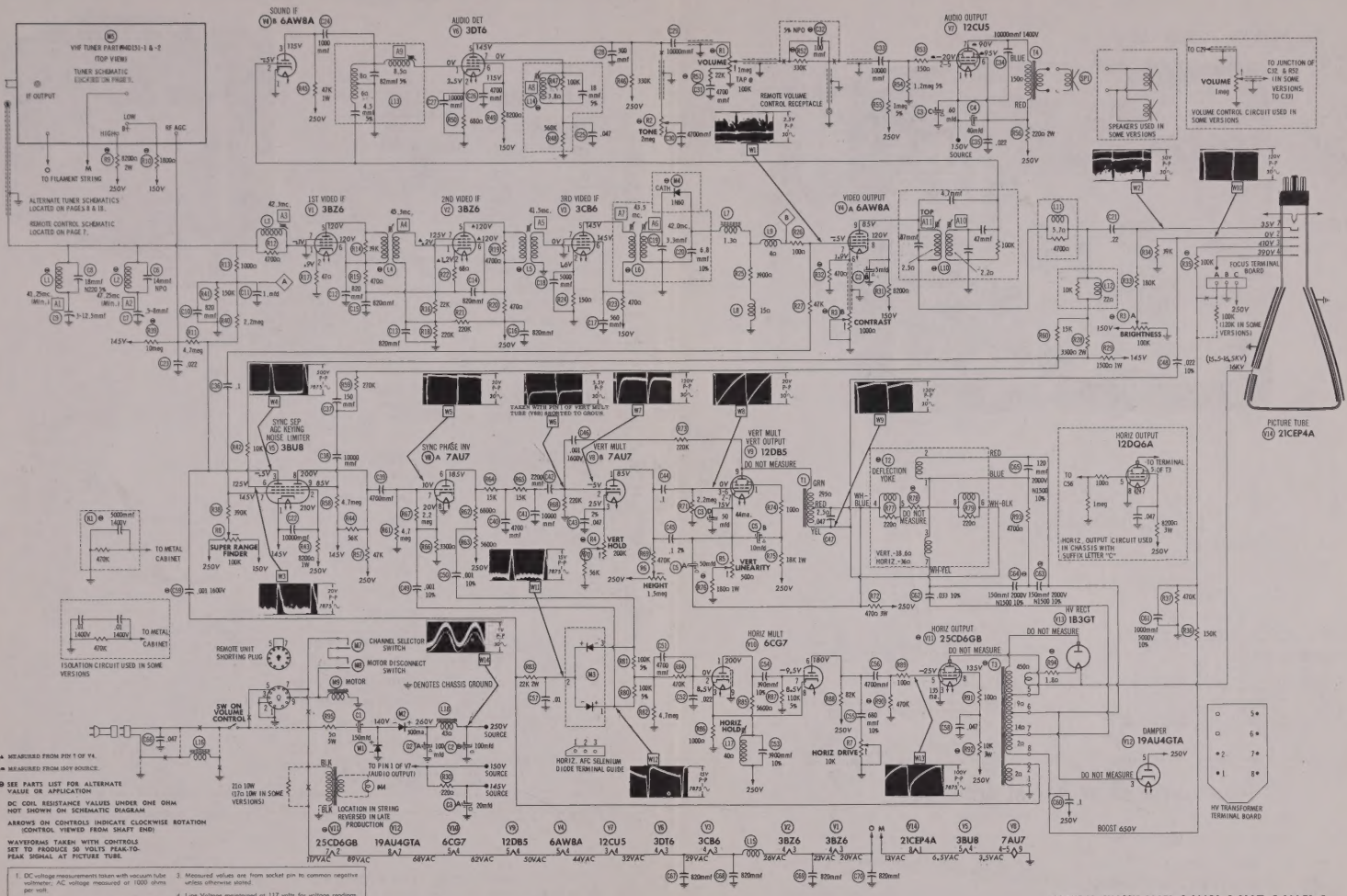
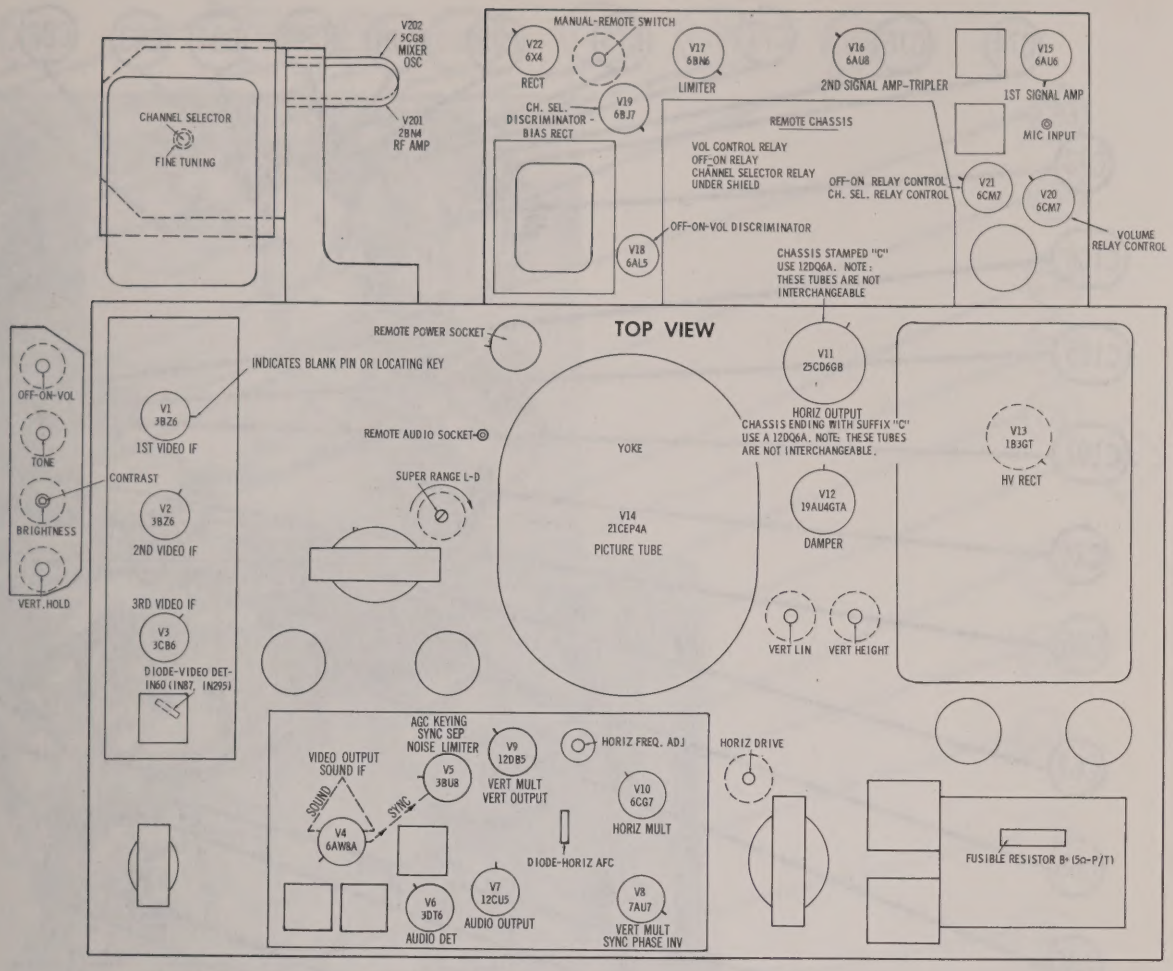

SOUND IF W4 6AW8A
AUDIO DET V5 3DT6
AUDIO OUTPUT V7 12CU5
VOLUME
TONE
REMOTE VOLUME CONTROL RECEPTACLE
SPEAKERS USED IN SOME VERSIONS
VOLUME CONTROL CIRCUIT USED IN SOME VERSIONS
VHF TUNER PART #40131-1 & -2
TUNER SCHEMATIC
IF OUTPUT
AGC
TO FILAMENT STRING
ALTERNATE TUNER SCHEMATICS LOCATED ON PAGES 8 & 18.
REMOTE CONTROL SCHEMATIC LOCATED ON PAGE 7.
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3CB6
VIDEO OUTPUT V4 A 6AW8A
CONTRAST
BRIGHTNESS
FOCUS TERMINAL BOARD
PICTURE TUBE V14 21CEP4A
SYNC SEP AGC KEYING NOISE LIMITER V8 3BU8
SYNC PHASE INV V6 7AU7
VERT MULT V10 7AU7
VERT MULT VERT OUTPUT V9 12DB5
DO NOT MEASURE
DEFLECTION YOKE
HORIZ OUTPUT 12DQ6A
HORIZ. OUTPUT CIRCUIT USED IN CHASSIS WITH SUFFIX LETTER "C"
SUPER RANGE FINDER
VERT HOLD
VERT LINEARITY
HEIGHT
VERT.-18.6o
HORIZ.-36o
HV RECT V13 1B3GT
HORIZ MULT V10 6CG7
HORIZ OUTPUT V11 25CD6GB
HORIZ HOLD
HORIZ DRIVE
DAMPER V12 19AU4GTA
BOOST 650V
HV TRANSFORMER TERMINAL BOARD
TO METAL CABINET
ISOLATION CIRCUIT USED IN SOME VERSIONS
REMOTE UNIT SHORTING PLUG
CHANNEL SELECTOR SWITCH
MOTOR DISCONNECT SWITCH
MOTOR
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
TO PIN 1 OF V7 (AUDIO OUTPUT)
LOCATION IN STRING REVERSED IN LATE PRODUCTION
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
TAKEN WITH PIN 1 OF VERT MULT TUBE (V6B) GROUNDED TO GROUN
▲ MEASURED FROM PIN 7 OF V4.
● MEASURED FROM 160V SOURCE.
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE INDICATES CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
25CD6GB 10VAC 89VAC
19AU4GTA 68VAC
6CG7 62VAC
12DB5 50VAC
6AW8A 44VAC
12CU5 32VAC
3DT6 29VAC
3CB6 26VAC
3BZ6 23VAC
3BZ6 20VAC
21CEP4A 13VAC
3BU8 6.5VAC
7AU7 3.5VAC
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ADMIRAL CHASSIS 16AB1, C, 16AD1, C, 16AE1, C, 16AG1, C, 16AL1, C, 16B1, C, 16D1, C, 16E1, C, 16G1, C, 16J1, C, 16K1, C, 16L1, C

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

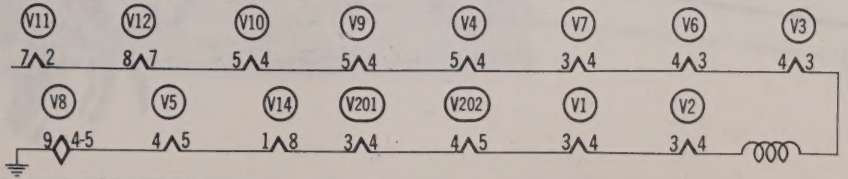
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R95), Rectifiers (M1, M2)**

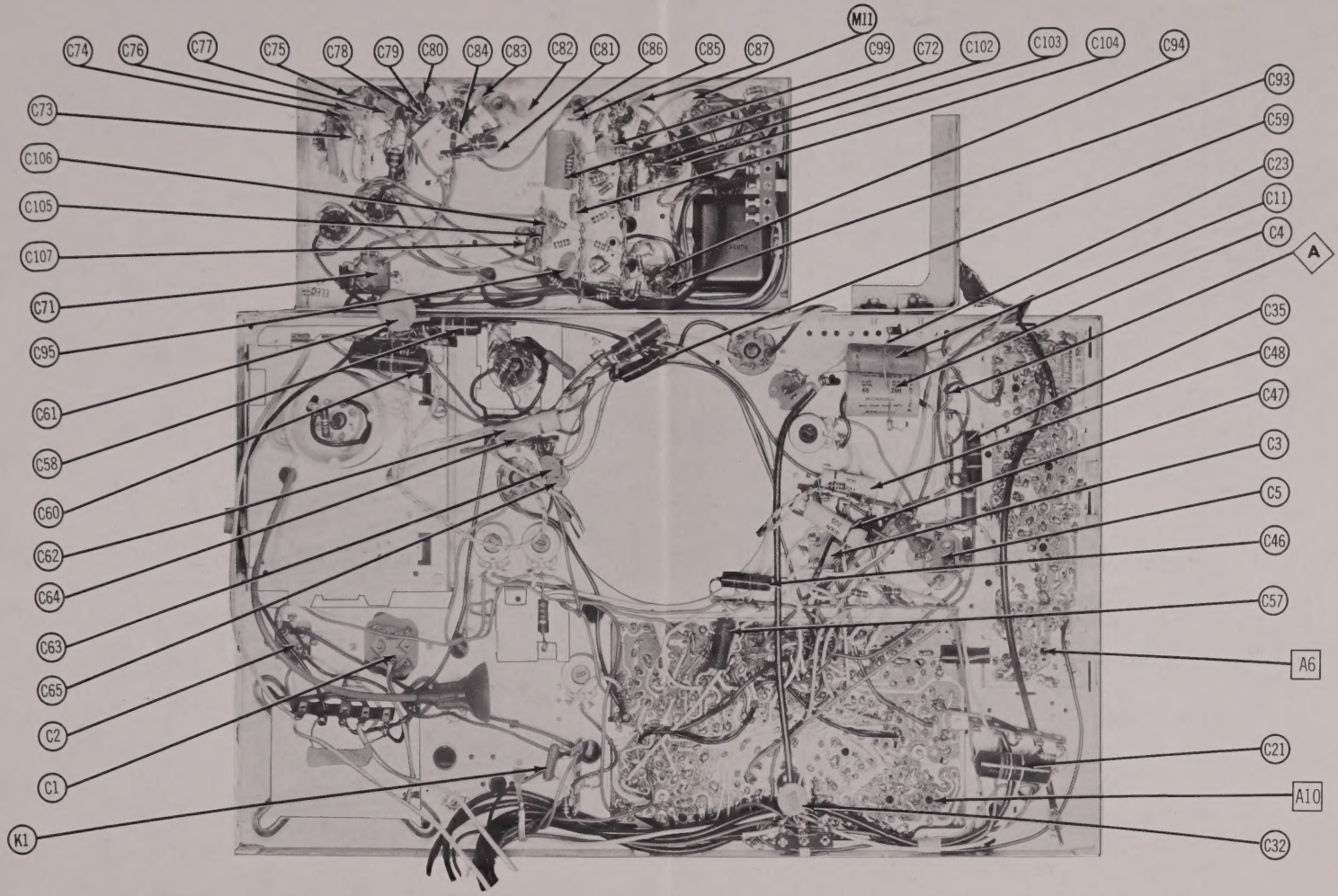
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, V3, Diode (M4), V4**
No pic, no sound, has snow - **V201, V202, V1**
No pic, has sound, has raster - **V4, V14**
Has pic, no sound - **V4, V6, V7**
Overloaded picture - **V5**

SYNC FAILURE
No vert. sync - **V5, V8**
No horiz. sync - **V5, V8, Rectifier (M3)**
No vert. or horiz. sync - **V5, V8**

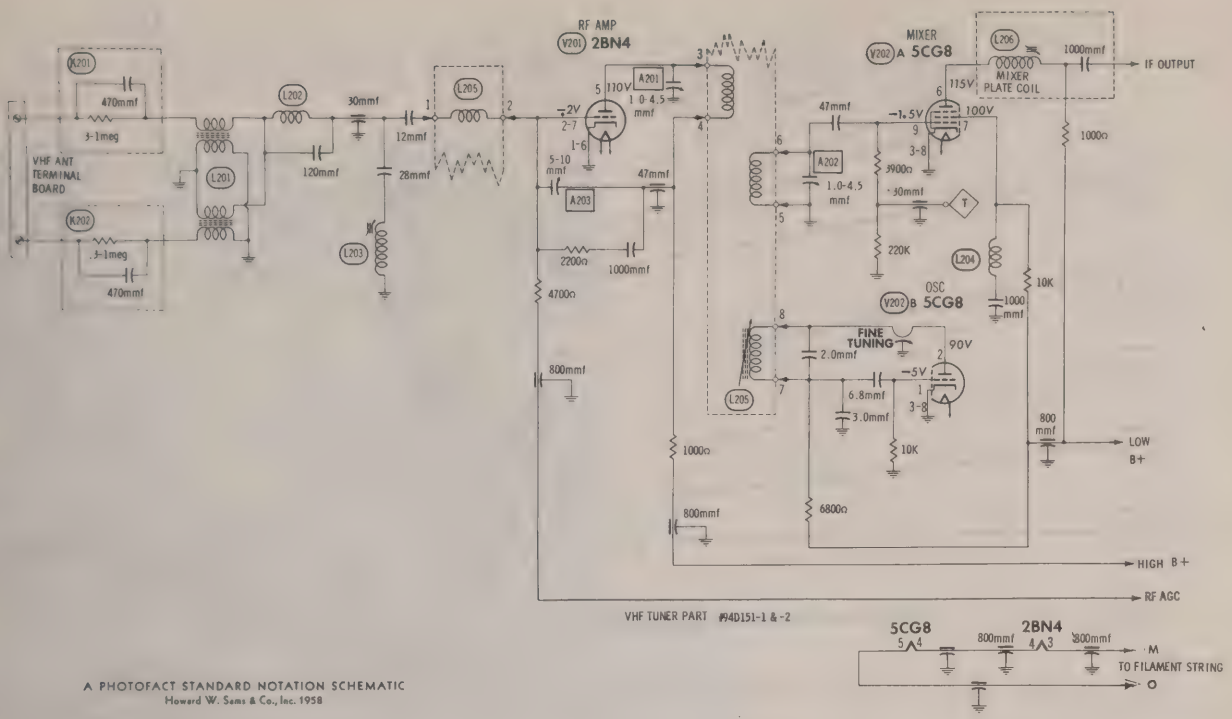
SWEEP FAILURE
No raster, has sound - **M3, V10, V11, V12, V13, V14**
No vertical deflection - **V8, V9**
Poor vert. linearity or foldover - **V8, V9**
Poor horiz. linearity or foldover - **V10, V11, V12**
Narrow picture - **V10, V11, V12, M1, M2**
Vert. off freq. - **V8, V9**
Horiz. off freq. - **V10**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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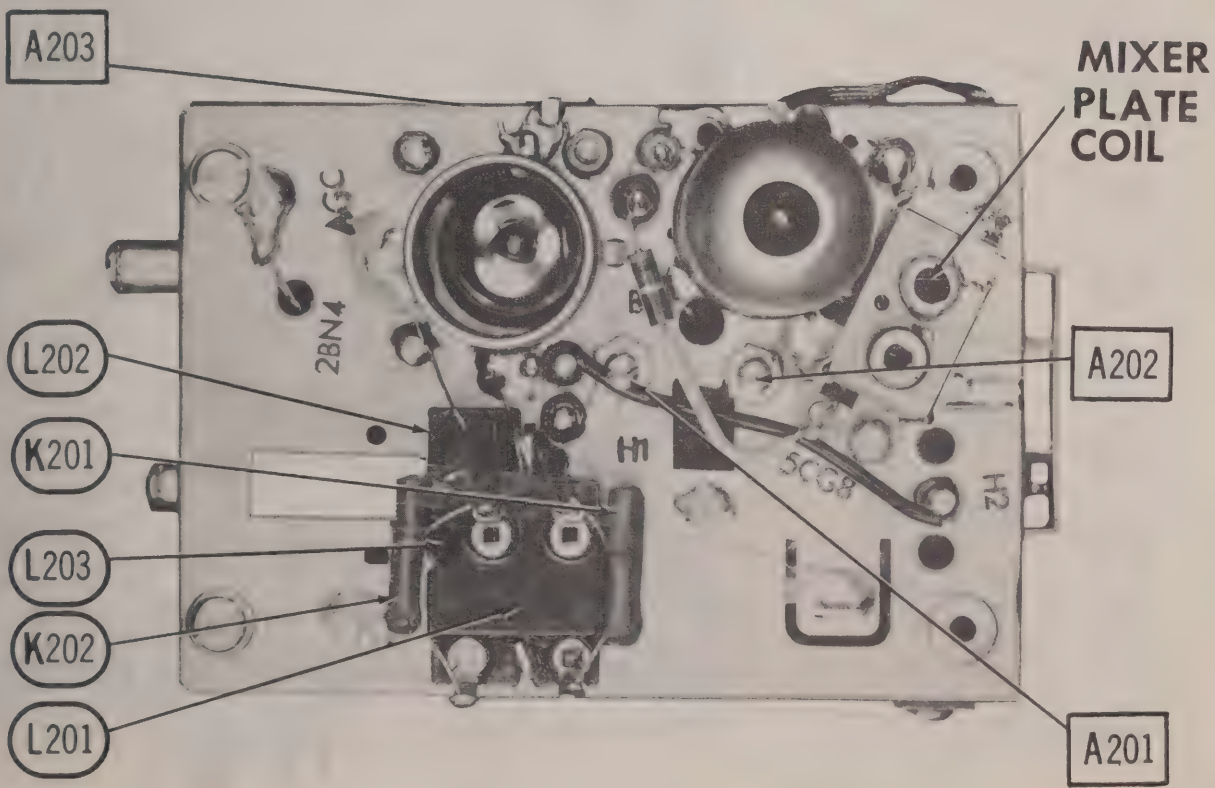
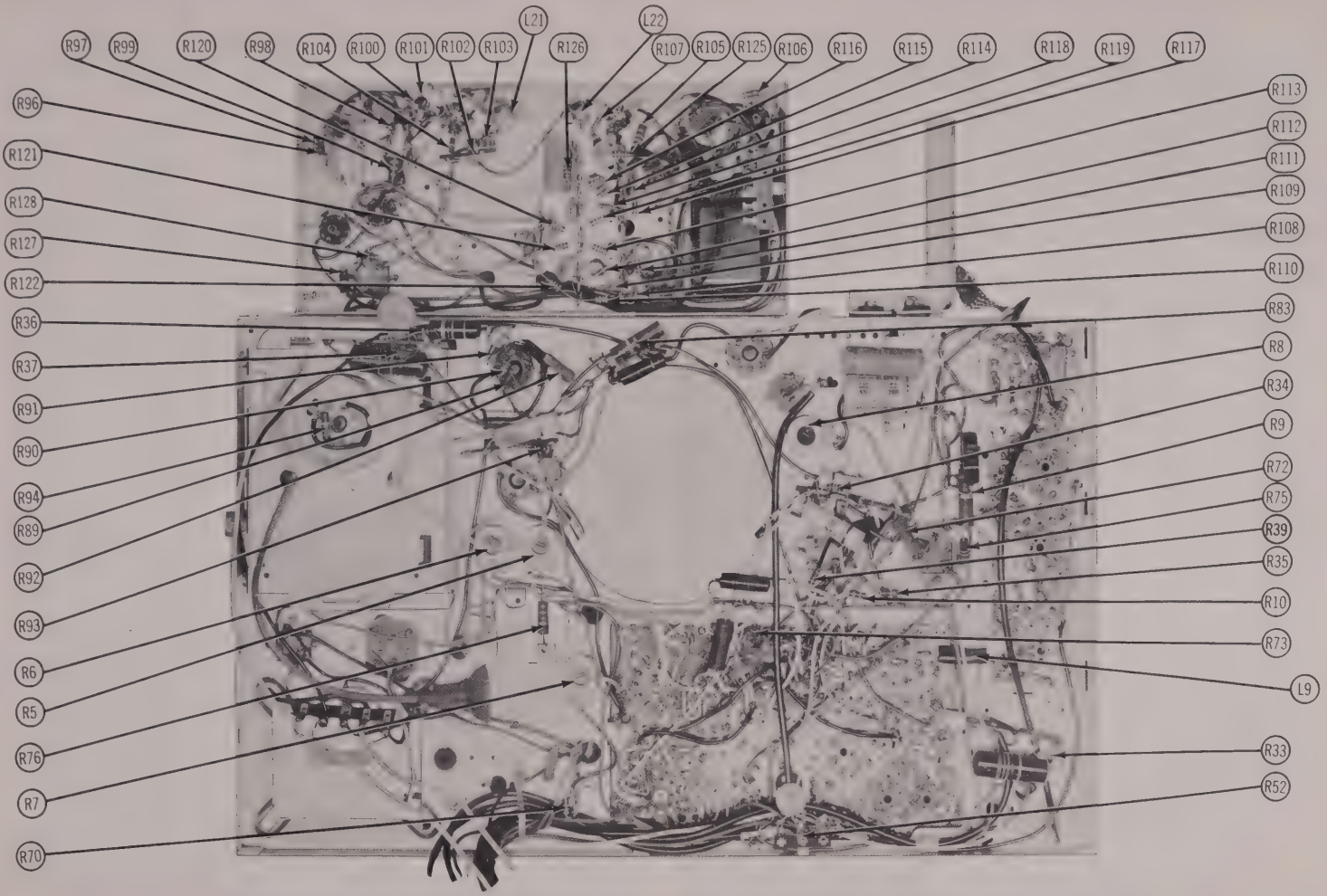
TUNER SCHEMATIC

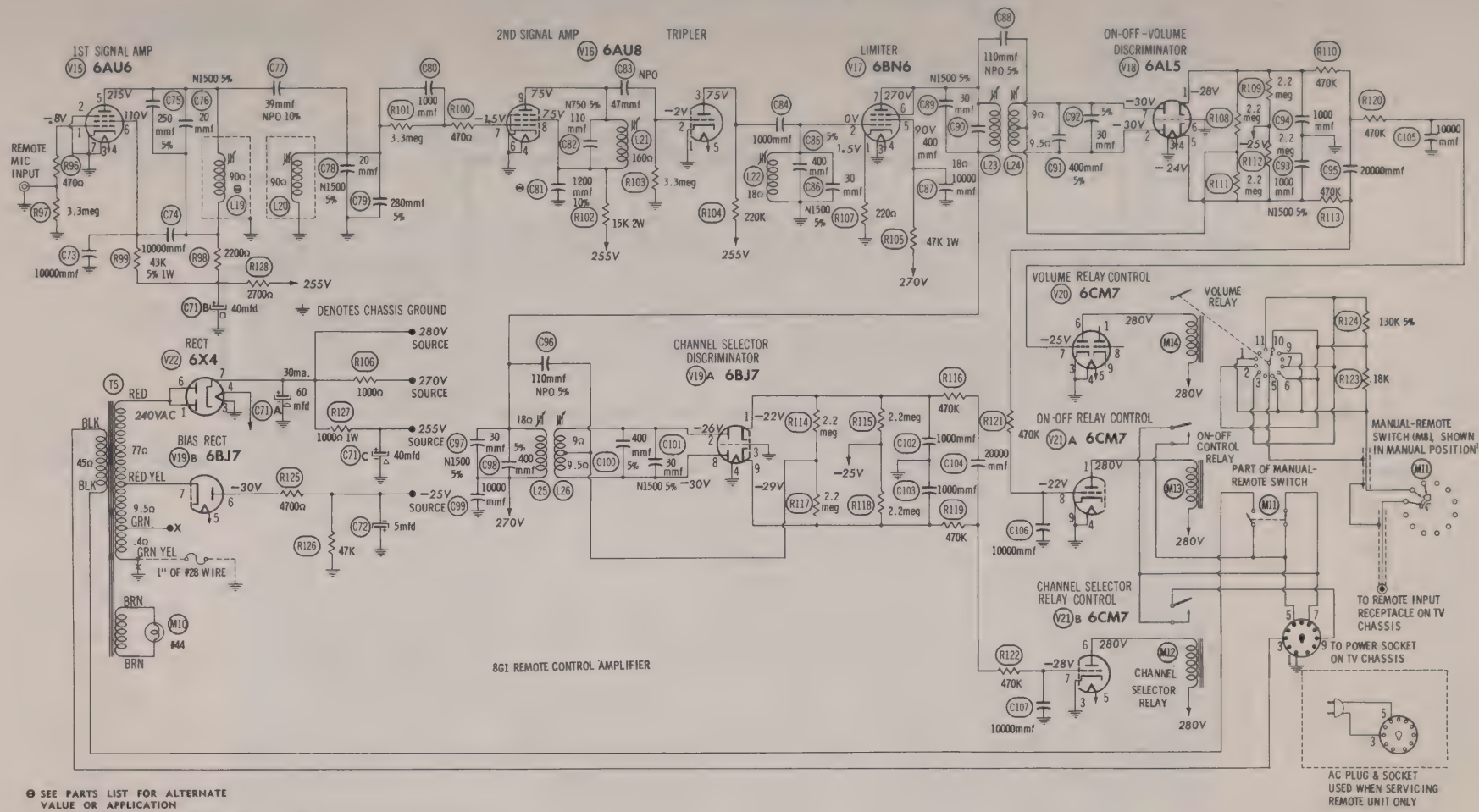


RF TUNER-TOP VIEW

SET 394 FOLDER 1



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

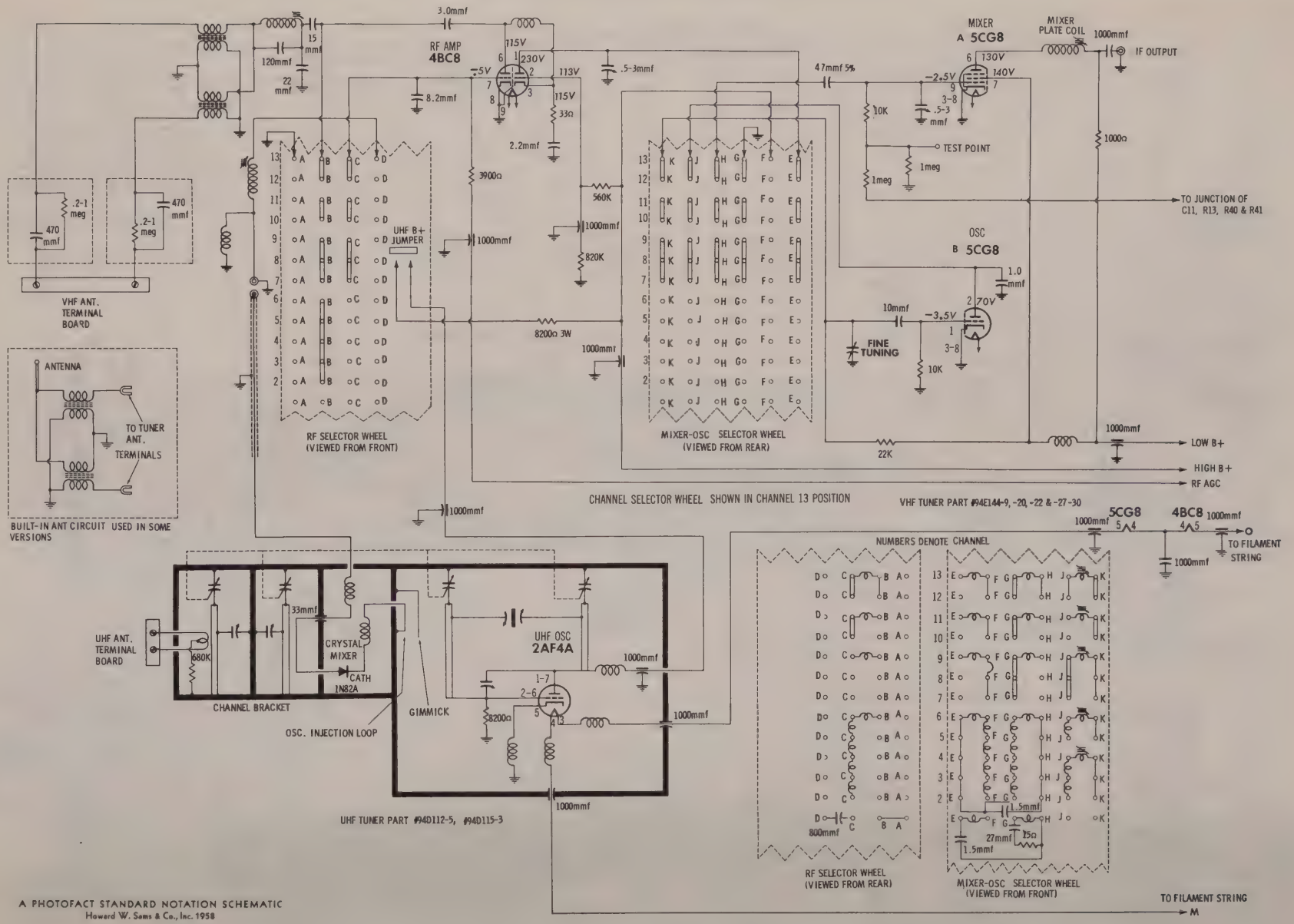
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

REMOTE TUNING SCHEMATIC

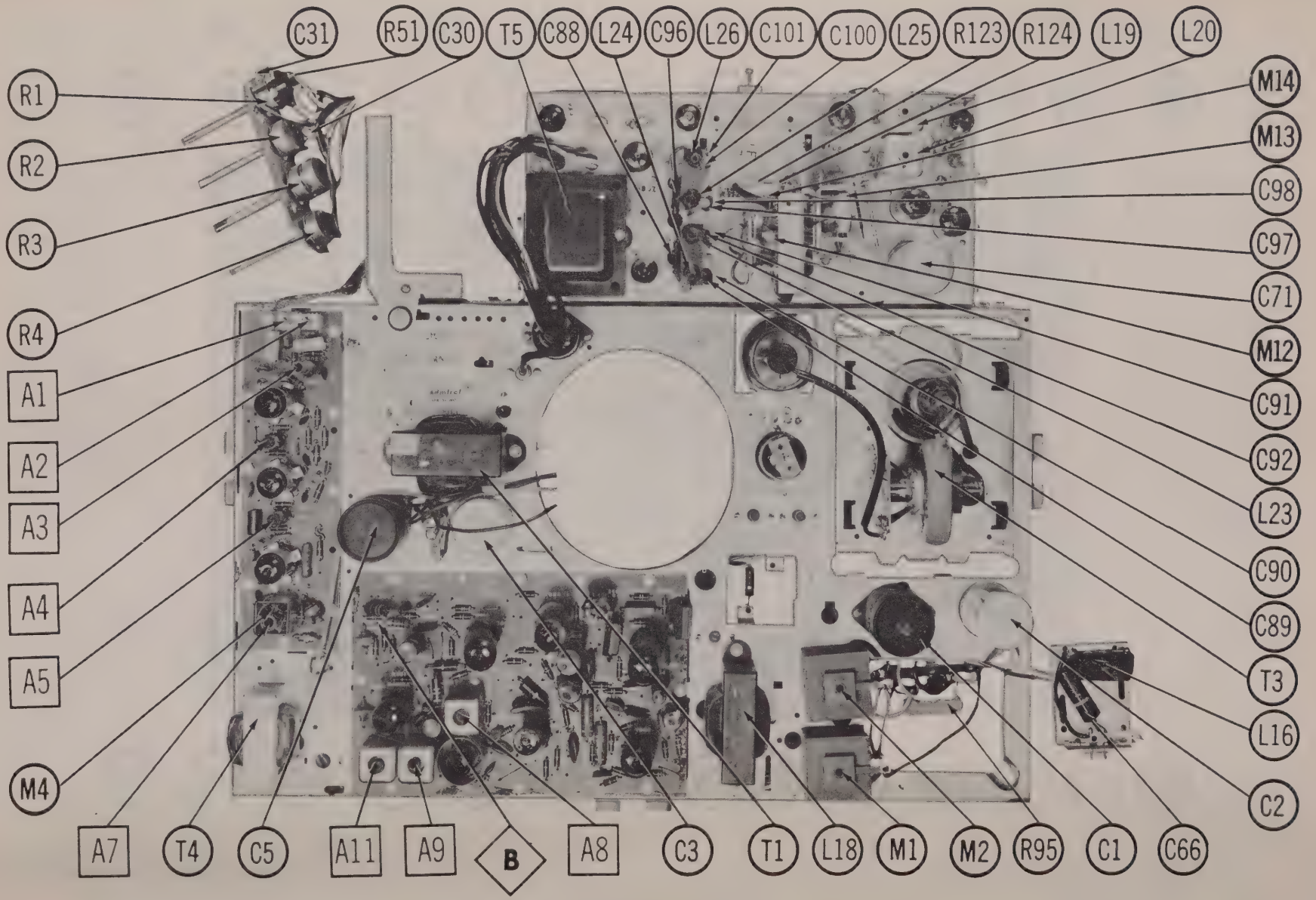
ADMIRAL CHASSIS 16AB1, C, 16AD1, C, 16AE1, C, 16AG1, C, 16AL1, C, 16B1, C, 16D1, C, 16E1, C, 16G1, C, 16J1, C, 16K1, C, 16L1, C



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE UHF-VHF TUNER SCHEMATIC

CAPACITOR IDENTIFICATION



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The HighVoltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a variable bias supply to point (A). Positive to chassis. Adjust bias to obtain response curve showing no signs of overloading.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer osc. tube (V202). Low side to chassis.	41.25MC (Unmod)	Any non-interfering channel	DC probe thru 10K to point (B). Common to chassis. (Across video det. load).	A1	Adjust for MINIMUM deflection.
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.3MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	45.3MC	"	"	Mixer Plate Coil	"
5.	"	"	"	"	"	A4	"
6.	"	"	41.5MC	"	"	A5	"
7.	"	"	42.0MC	"	"	A6	"
8.	"	"	43.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	42.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across video det. load).		Check for response similar to Fig. 1. If necessary, retouch A3 thru A7 for desired response.

SOUND IF ALIGNMENT

Turn the set on and tune in the strongest station in the area. Allow 15 minutes for set to warm-up. Set all controls for normal operation.
Using a non-metalic alignment tool, turn A8 very slowly clockwise until a buzz is heard in the sound. Then turn counter clockwise until the loudest and clearest sound is heard. There may be two points at which the sound peaks, (approximately ½ turn apart). The slug should be set at the center of the second peak as the slug is turned clockwise.
Using an attenuator between the antenna and the antenna terminals, reduce the input signal until a considerable amount of hiss is heard in the sound similar to super-regeneration. The signal may also be reduced by disconnecting the antenna lead and placing it in the vicinity of the antenna terminals.
Carefully adjust A9 and A10 for clearest sound and MINIMUM noise..
If the hiss desappears during alignment, further reduce the signal until the hiss returns.

4.5MC TRAP ALIGNMENT

Tune in a strong TV station and adjust the fine tuning until a beat pattern appears in the picture. Observe and adjust the picture A11 for MINIMUM beat pattern.

REMOTE CONTROL CHASSIS 8G1 ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 17 & 20.

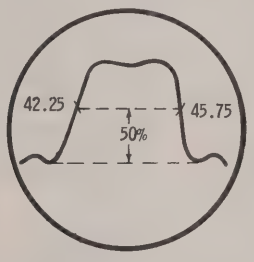


FIG.1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	
V2	2nd Video IF Amp	3BZ6	
V3	3rd Video IF Amp	3CB6	
V4	Video Output-Second IF Amp	6AW8A	
V5	AGC-Keying-Noise Limiter-Sync Sep	3BU8	
V6	Audio Det.	3DT6	

ITEM No	USE	TYPE	NOTES
V7	Audio Output	12CL8	
V8	Vert. Mult. -Sync Phase Inv	7AU7	
V9	Vert. Mult. -Vert. Output	12DB5	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	25CD6GB	Note 1
V12	Damper	19AU4GTA	
V13	HV Rectifier	1B3GT	

Note 1. Chassis ending with suffix "C" use 12DQ8A NOTE: These tubes are not interchangeable.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V14	21CEP4A		21CEP4 ①	21CEP4A ① 21CEP4 ③	1 "Silverama" ② 2 "Silver Screen 85."

ELECTROLYTIC CAPACITORS

ITEM No	RATING			REPLACEMENT DATA						
	CAP	VOLT	ADMIRAL PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1	150	150	67DX5-203	AFH-31-75	XA0286	FP131	TM3-34	S-105	TVL-1430
C2A	▲100	300	67DX5-208	AFH3-41-50	B0332	FP227 †	TMT-165	D-148	TVL-2641
B	▲100	300							
C3A	▲20	200	67DX6-307	AFH4-66-20	D0032 *BH505	FP440 *TC39		Q-136	*R2573
B	▲5	200							
C	▲80	200							
D	▲50	50							
C4	40	200	67A25-2	PR2350V40	SR4025	TC58	TD-40-350	MT-2540	TVA-1511
C5A	▲50	300	67DX5-204	AFH3-41	C0320	FP343 8	TMT-47	D-132	*R2574
B	▲10	300							

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	14		65C6-40							NPO
C7	5-8		66A38-8							
C8	18		65CK0-140							N220 5%
C9	3-12.5		66A38-7							
C10	820				DD-821	BYA10T82	ED-820		5GA-T82	
C11	1.0	100		P288N-1	DF-104	CUB2P1		GEM-101	JTM-P1	
C12	820				DD-821	BYA10T82	ED-820		5GA-T82	
C13	820				DD-821	BYA10T82	ED-820		5GA-T82	
C14	820				DD-821	BYA10T82	ED-820		5GA-T82	
C15	820				DD-821	BYA10T82	ED-820		5GA-T82	
C16	820				DD-821	BYA10T82	ED-820		5GA-T82	
C17	560			SI 560	LTN7S6	GP-560	UC-5356		5GA-T56	
C18	5000			BPD-005	DD-502	BYA10D5	ED-005		DC525	SHK-D5
C19	3.3			NPO-SI 3.3	TCZ-3R3	CDV93C	TCO-3.3		ZT-5S33	5TCD-V33
C20	6.8		65B41-068	NPO-SI 6.8	TCZ-6R8	C10Y8C	TCO-6.8		ZT-5S68	5TCD-V68
C21	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	10%
C22	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	SHK-S1	
C23	.022	400		P488N-022	DD-303	CUB4S22	ED-02	GEM-4122	4TM-S22	
C24	1000			BPD-001	DD-102	BYA5D1	ED-1000	DC5S	SHK-D1	
C25	.047	300		P288N-047		BCB247J		GEM-3147	3SE-S47	
C26	4700			BPD-0047	DD-472	BYA10D47	ED-4700	UC-5347	5GA-D47	
C27	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	SHK-S1	
C28	300				DD-301	L10T3	ED-300	UC-533	5GA-T3	
C29	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	SHK-S1	
C30	4700			BPD-0047	DD-472	BYA10D47	ED-4700	UC-5347	5GA-D47	①
C31	4700			BPD-0047	DD-472	BYA10D47	ED-4700	UC-5347	5GA-D47	①
C32	100				TCZ-100		TCO-100			NPO 5% ①
C33	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	SHK-S1	
C34	10000	1400		DAC-37	DDE6-103	HVR1S01		GEM-1601	SL-S10	
C35	.022	400		P488N-022	DD-303	CUB4S22	ED-02	GEM-4122	4TM-S22	
C36	.1	200	64C36-S3	P288N-1		BCB2P1J		ACE401	3SE-P10	
C37	150			SI 150	DE-151	LTN7S	GP-150	UC-5316	5GA-T15	
C38	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	SHK-S1	
C39	4700			BPD-0047	DD-472	BYA10D47	ED-4700	UC-5347	5GA-D47	
C40	4700			BPD-0047	DD-472	BYA10D47	ED-4700	UC-5347	5GA-D47	
C41	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	SHK-S1	
C42	8200			BPD-0823	DD-332	BYA10D22	ED-0022	UC-5322	5GA-D22	
C43	.047	200	64C15-155							5% Drift
C44	.1	400	64C16-30	P488N-1		BC6P1J		ACE401	4SE-P10	
C45	.1	400	64C16-130							5% Drift
C46	.001	1600	64B23-23	P1688N-001	DDH5-153	CUB16D1		GEM-1612	MB-D1	
C47	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C48	.022	600	64B23-11							10%
C49	.001	600	64B2-24							10%
C50	.001	600	64B2-24							10%
C51	4700			BPD-0047	DD-472	BYA10D47	ED-4047	UC-5347	5GA-D47	
C52	.022	300	64B16-57	P288N-022		BCB22J		ACE412	3SE-S22	
C53	3900			1484-0039		1N5D29	CY20C3932		MS-339	10%
C54	390				DE-391	SR5T39	ED-390		MS-339	10%
C55	390			1484-00068	DE-391	1R5T66	ED-390		MS-368	10%
C56	4700			BPD-0047	DD-472	BYA10D47	ED-4047	UC-5347	5GA-D47	
C57	.01	600		P688N-01	DE-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C58	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C59	.001	1600		P1688N-001	DDH5-103	CUB16D1		GEM-1612	MB-D1	③
C60	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	10%
C61	1000	5000	65D10-164							10%
C62	.033	600								10%
C63	150	3000	65D10-149							N1500 10% ③
C64	150	3000	65D10-149							N1500 10% ③
C65	150	3000	65D10-148							N1500 10%
C66	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C67	820				DD-821	BYA10T82	ED-820		5GA-T82	
C68	820				DD-821	BYA10T82	ED-820		5GA-T82	
C69	820				DD-821	BYA10T82	ED-820		5GA-T82	
C70	820				DD-821	BYA10T82	ED-820		5GA-T82	

† Not used in some versions.
Some versions may use 300mmf in this application.
Chassis stamped "Run 36" use 510mmf ③2000V in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	ADMIRAL PART No	CENTRALAB PART No	CLAROSTAT PART No.	IRC PART No	MALLORY PART No	
R1A	1meg	½	75B38-2		ABT-7417	A47F3-1meg	PI167IS	Volume-Tap ▲) 100K①
B	Shaft				AK-8 †	RS-3 16	Not Req	
C	Switch				SW1-12	SW1-*	Not Req	Push-pull
R2A	2meg	½	75K13-95		AB-76	A47-2meg-Z	QS5-159	Tone ①
B	Shaft				AK-8	RS-3 16	NQ	
R3A	100K	½	75B17-22		FI-31			Brightness ①
B	1000Ω				R2-5		● UE3790	Contrast ①
R4A	200K	½	75K13-92		AB-48	A47-200K-S	QH-129	Vert. Hold ①
B	Shaft				AK-8	RS-3/16	NQ	
R5A	500Ω	½	75B20-103		AB-4	A47-500-S	QH-103	Vert. Lin.
B	Shaft				AK-1	A47-1/4	SQ	
R6A	1.5meg	½	75B20-105		BX-745	A47-1.5meg	QH-135	Height
B	Shaft				Not Req.	FK3-1/4	SQ	Not Req.
R7A	10K	½	75B20-100		AB-14	A47-10K-S	QH-118	Horiz. Drive
B	Shaft				AK-1	FK3-1/4	SQ	Not Req.
R8A	100K	½	75B20-101		AB-60	A47-100K-S	QH-128	Super range finder
B	Shaft				AK-19	RN-3	TQ	Not Req.

* Uses KN-4 on red label control only
* "STA-LOC" Equivalent: FC15L, GS2L35, RU15R, HS2625
† 1meg, rotary sw., no tap.
• Dual control

①	16AB1, 16AE1 16B1, 16E1	16AD1 16D1, C	16AG1	16AJ1	16AGIC, 16GI, C	16AL1C 16LJC	16LJ	16BIC, 16E1C 16J1, 16K1
Volume	75B24-96 †	75B24-94 †	75D1-83	75L1-100	75D1-83 †	75D1-100 †	75D20-110 †	75B38-2
Tone	75D13-95	75B13-95						75D13-95
Contrast	75B17-22 †	75B17-22 †	75D13-100	75C13-98	75D13-100	75C13-98	75D13-98	75B17-22 †
Brightness	75B17-22 †	75D13-94	75D20-101	75D20-101	75D20-101	75D20-101	75D20-101	75B17-22 †
Vert. Hold	75C13-92	75D13-92	75D20-97	75D13-97	75D20-97	75D13-97	75D13-97	75D13-93

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R9	8200Ω	2		Note 1
R10	18000			Note 2
R11	4.7meg			
R12	4700Ω			
R13	10000			
R14	39K			
R15	470Ω			
R16	22K			
R17	47Ω			
R18	220K			
R19	470Ω			
R20	470Ω			
R21	220K			
R22	68Ω			
R23	470Ω			
R24	150Ω			
R25	39000			
R26	.00Ω			
R27	47K			
R28	33000	2		
V29	1500Ω	1		
R30	220Ω			
R31	82000			
R32	470Ω			Note 3
R33	180K			
R34	39K			Note 4
R35	100K			Note 5
R36	150K			
R37	470K			
R38	390K			
R39	10meg			Note 6
R40	2.2meg			
R41	150K			
R42	10K			
R43	8200Ω	1		
R44	56K			
R45	47K	1		
R46	330K			
R47	100K			Note 7
R48	560K			
R49	82000			
R50	680Ω			
R51	22K			Note 4
R52	330K			Note 4

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R53	150Ω			
R54	1 2meg 5%			
R55	1meg 5%			
R56	2200Ω	2		
R57	47K			
R58	1.5meg			
R59	270K			
R60	15K			
R61	4.7meg			
R62	6800Ω			
R63	5600Ω			
R64	15K			
R65	15K			
R66	3300Ω			
R67	2.2meg			
R68	220K			
R69	470K			
R70	56K			
R71	2.2meg			
R72	470Ω	3	61B24-317	
R73	220K			
R74	100Ω			
R75	18K	1		
R76	180Ω	1		Note 8
R77	220Ω			
R78	5.8Ω Cold		61A37	Note 9
R79	220Ω			
R80	100K 5%			
R81	100K 5%			
R82	4.7meg			
R83	22K	2	60B20-223	
R84	470K			
R85	5600Ω			
R86	1000Ω			
R87	100K 5%			Note 10
R88	62K			
R89	100Ω			
R90	470K			Note 11
R91	100Ω			
R92	10K	3	61B24-349	Note 12
R93	4700Ω			
R94	1.8Ω			Note 13
R95	5Ω	5	61A38-3	

Note 1. Some versions may use 18000 2W or 2200Ω 3W in this application.
Note 2. Chassis stamped Run 10 and 11 use 470Ω in this application.
Note 3. Chassis stamped Run 17 and lower use 220Ω in this application.
Note 4. Not used in some versions
Note 5. Some versions may use 130K in this application.
Note 6. Chassis stamped Run 14 and lower use 7.5meg in this application.
Note 7. Chassis stamped Run 15 and lower use 220K in this application.
Note 8. Chassis with suffix "C" use a 220Ω 1W in this application.
Note 9. Temperature compensating resistor.
Note 10. Chassis stamped Run 13 and lower use 120K in this application.
Note 11. Chassis with suffix "C" use 1meg in this application.
Note 12. Chassis with suffix "C" use 8200Ω 2W in this application.
Note 13. Chassis with suffix "C" use 1.2Ω in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Output	79B43-14						A-11X ①
T2A	Yoke-Horiz. (18MH@ 2107)-Vert. (33MH)	94D147-3						Y60 & NW2S ②
B	Rear Cover &							
M6	Centering Device	94C148-1						
	Alternate Yoke	94D150-3						
	Alt. Rear Cover & Centering Device	94C152						
T3	Horiz. Output	79D77-3						
	Horiz. Output	79D77-2 ③						

① Connect as autoformer.
② Use original rear cover and centering device.
③ Used in chassis with suffix "C".

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V C IMP	ADMIRAL PART No.	QUAM PART No.	
SP1	6	PM	3- 4Ω	78C324-3	6A2I	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	47.25MC Trap Coil	73B37-1					1.36 Microhenries ①
L2	41.25MC Trap Coil	73B37-1					1.36 Microhenries ①
L3	1st. Video IF	72C132-31					
L4	2nd. Video IF	72C132-23					
L5	3rd. Video IF	72C132-23					
L6	4th. Video IF	73B91-1					
L7	Resonant Choke	73B34-7					7.7 Microhenries
L8	Shunt Peaking Coil	73B5-30	19-3500	TV-302	6174	VP-8	500 Microhenries
L9	Resonant Choke	73B31-1					39 Microhenries
L10A	4.5MC Trap	72C85-2					④
B	1st. Sound IF						
LU	Series Peaking Coil	73B5-23	19-3180 *	TV-184 *	6180 *	VP-8 *	189 Microhenries, wound on 470Ω resistor
L12	Shunt Peaking Coil	73B6-36					Wound on 10K resistor
L13	2nd. Sound IF	73B186-1					
L14	Quadrature Coil	72C133-27					⑤
L15	Fil. Choke	73B37-2	19-1001	BC-582	6604		1.4 Microhenries
L16	Line Choke	73B31-1					

* Parallel with 4700Ω resistor
① Alternate part #73B37-3 may be used in some versions
② Alternate part #72C132-38 may be used in some versions
③ Alternate part #72B181-2 may be used in some versions.
④ Alternate part #72B185-2 may be used in some versions.
⑤ Alternate part #72C133-18 may be used in some versions.

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES.		REPLACEMENT DATA						NOTES
	PRI	SEC	ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	Thordarson PART No	
LJ7	40Ω		94C17-4		TV-184				

FILTER CHOKE

ITEM No	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT (000 ^\)	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L19	280A	43Ω	1.5 Hy.	74B18-33	C-3297			C-2328	26C93	C-17X

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA
X1	Chassis Isolation	5000mmf ② 1400V, 470K ①	63B10-3	

① Some versions may use individual components in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	ADMIRAL PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	300A	93A4-4 ①	1130 ①	1N1008 ②	RS400BL ①	400 ①	① Selenium type.
M2	300A	93A4-4 ①	1150 ①	1N1008 ②	RS400BL ①	400 ① M500 ③	② Germanium type. ③ Silicon type.
M3		93B5-4 ①	1215 ① ④		1T1 ① ④	M500 ③	④ Two required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ADMIRAL PART No.	CBS PART No.	SYLVANIA PART No.	
M4	1N60 *	1N60	1N60	1N60	Video Detector (Pigtail)

* Some versions may use 1N57 or 1N295 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuner	94D151-1	VHF - Ch. 16J1, 16K1
	Tuner	94D151-3	VHF - Ch. 16J1, 16K1
	Tuner	94E144-13	VHF - Ch. 16G1, C, 16LJ, C, 16M, C, 16H1, C
	Tuner	94E144-19	VHF - Ch. " "
	Tuner	94E144-24	VHF - Ch. " "
	Tuner	94E144-26	VHF - Ch. " "
	Tuner	94E144-8	UHF-VHF - Ch. 16AB1, 16AD1, 16AE1, 16AG1, C, 16AL1, C
	Tuner	94E144-20	UHF-VHF - Ch. " "
	Tuner	94E144-23	UHF-VHF - Ch. " "
	Tuner	94E144-27	UHF-VHF - Ch. " "
	Tuner	94E144-30	UHF-VHF Ch. " "
	Tuner	94C151-5	UHF Ch. " "
	Tuner	94D155-3	UHF Ch. " "
M6	Centering Device	94C148-1	Includes yoke cover (For yoke 94D147-3)
	Centering Device	94C152	Includes yoke cover (For yoke 94D150-3)
M7	Switch		Channel Selector
M8	Switch		Motor Disconnected
M9	Motor		Channel Selector
	Printed Board	A5T75-1	Video IF
	Printed Board	A5T80-1	Main

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8778
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

ADMIRAL CHASSIS 16AB1, C, 16AD1, C, 16AE1, C, 16AG1, C, 16AL1, C, 16B1, C, 16D1, C, 16E1, C, 16G1, C, 16J1, C, 16K1, C, 16L1, C

FOLDER 1

REMOTE CONTROL
PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V15	1st. Signal Amp.	6AU6	
V16	2nd. Signal Amp. -Tripler	6AU8	
V17	Limiter	6BN6	
V18	On-Off-Vol. Discriminator	6AL5	
V19	Channel Selector Discriminator - Bias Rect.	6BJ7	

ITEM No.	USE	TYPE	NOTES
V20	Volume Relay Control	6CM7	
V21	On-Off Relay Control-Channel Selector Relay Control	6CM7	
V22	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C7A	▬60	350	67D15-310	AFH3-29-25	C0232	FP447.5	TMD-56	T-111	TVL-3640.2
B	▬40	350					TD-40-350		
C	▲40	350							
C72	5	50	67A4-37	PRS50V5	BBR5-50	TC30	TD-5-50	MT-0504	TVA-1303

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C73	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C74	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C75	250			1464-00025		22R5T22			MS-325	5%
C76	20		65D10-158							N1500 5%
C77	39		65D6-88	NPO-SI 39	TCZ-39	C10Q39C	TCO-39			NPO 10%
C78	20		65D10-158							N1500 5%
C79	280		65A48-281							5%
C80	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C81	1200					1R5D12	ED-1200		MS-212	10%①
C82	110		65D10-156		TCN-110		TC7-110			N750 5%
C83	47			NPO-DI 47	TCZ-47	C10Q47C	TCO-47		5TCC-Q47	NPO
C84	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C85	400		65A48-401			5R5T4		MCE243	MS-34	5%
C86	30		65D10-157							N1500 5%
C87	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C88	110		65D6-36		TCZ-110		TCO-110			NPO 5%
C89	30		65D10-157							N1500 5%
C90	400		65A48-401			5R5T4		MCE243	MS-34	5%
C91	400		65A48-401			5R5T4		MCE243	MS-34	5%
C92	30		65D10-157							N1500 5%
C93	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C94	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C95	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C96	110		65D6-36		TCZ-110		TCO-110			NPO 5%
C97	30		65D10-157							N1500 5%
C98	400		65A48-401			5R5T4		MCE243	MS-34	5%
C99	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C100	400		65A48-401			5R5T4		MCE243	MS-34	5%
C101	30		65D10-157							N1500 5%
C102	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C103	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C104	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C105	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C106	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C107	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	

① Some versions may use .0015mfd ⓐ 600V 10% (Part #64A24-9) in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ADMIRAL PART No.	NOTES
R96	470Ω			
R97	3.3meg			
R98	2200Ω			
R99	43K 5%	1		
R100	470Ω			
R101	3.3meg			
R102	15K	2		
R103	3.3meg			
R104	220K			
R105	47K	1		
R106	1000Ω			
R107	220Ω			
R108	2.2meg			
R109	2.2meg			
R110	470K			
R111	2.2meg			

ITEM No.	RATING OHMS	RATING WATT	ADMIRAL PART No.	NOTES
R112	2.2meg			
R113	470K			
R114	2.2meg			
R115	2.2meg			
R116	470K			
R117	2.2meg			
R118	2.2meg			
R119	470K			
R120	470K			
R121	470K			
R122	470K			
R123	18K			
R124	130K 5%			
R125	4700Ω			
R126	47K			
R127	1000Ω	1		
R128	2700Ω			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T5	117V ⓐ .4A	220V ⓐ .030A tap ⓐ 30V ⓐ .001A & 6.3V ⓐ 3.8A	6V ⓐ .250A	80B58-1						

PARTS LIST AND DESCRIPTIONS (Continued)

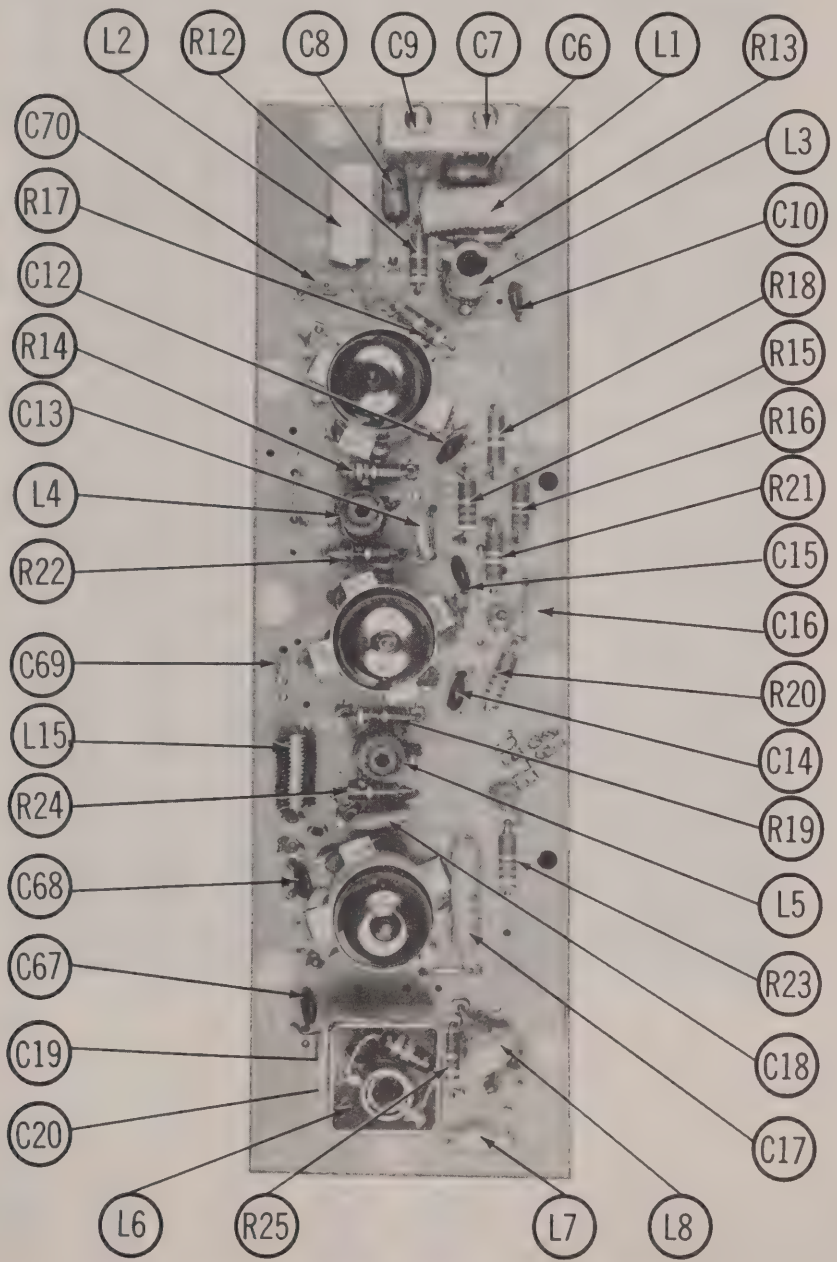
COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L19	1st. 40KC Plate Coil	72B193-1	
L20	2nd. 40KC Grid Coil	72B193-2	
L21	2nd. 40KC Plate Coil	72B192-1	
L22	Limiter Grid Coil	72B192-2	

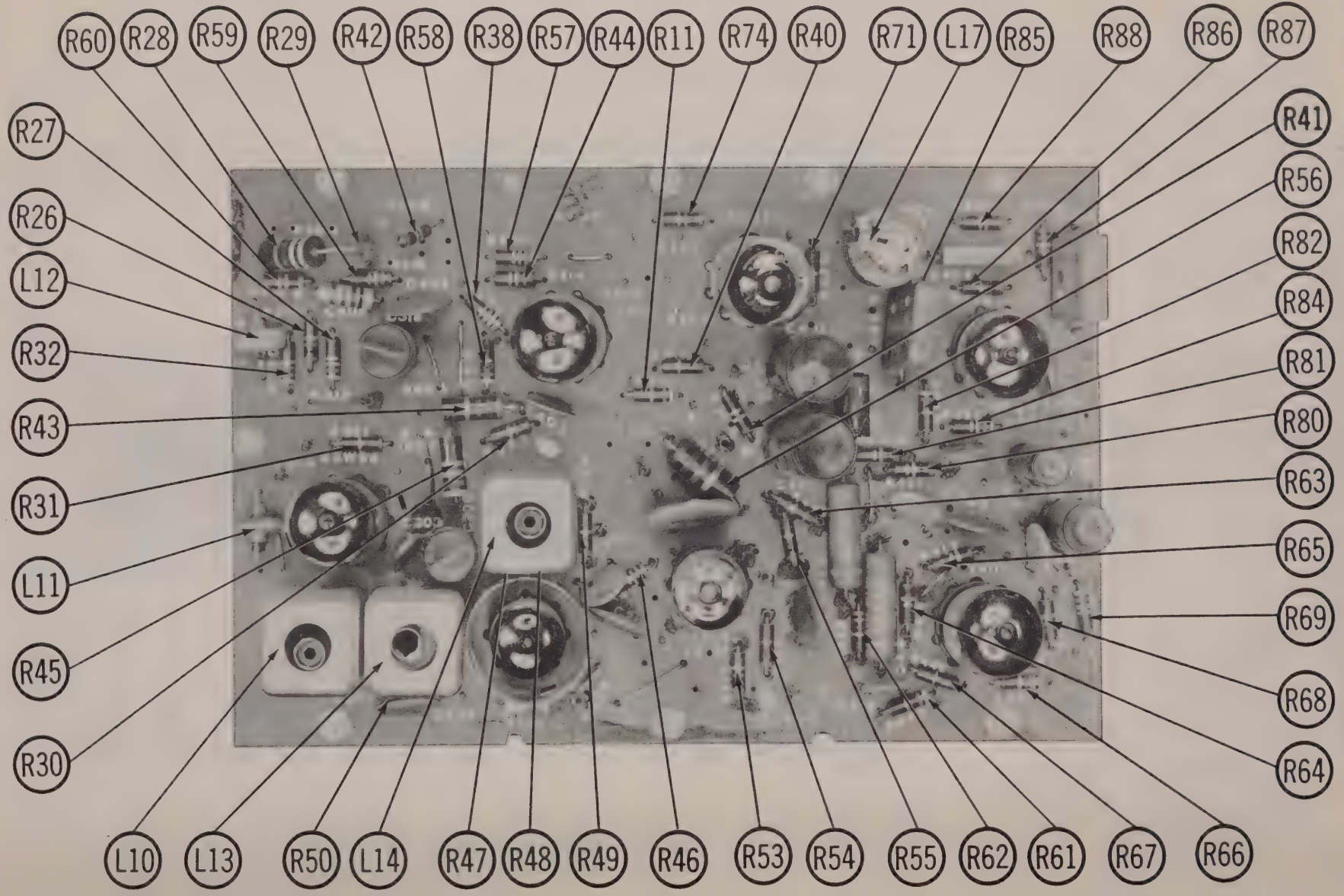
ITEM No.	USE	ADMIRAL PART No.	NOTES
L23	122-125KC Disc. Pri.	72B192-2	
L24	122-125KC Disc. Sec.	72B192-3	
L25	115KC Disc. Pri.	72B192-2	
L26	115KC Disc. Sec.	72B192-3	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M10	Pilot Lamp		#44
M11	Switch	77B75-1	Manual-Remote, Rotary, wafer type
M12	Relay	83A13-1	Channel Selector
M13	Relay	83B11-1	On-off
M14	Relay	83B14-1	Volume control
M15	Microphone	76B137	



VIDEO IF PRINTED BOARD



RESISTOR IDENTIFICATION

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.

VHF OSCILLATOR ALIGNMENT FOR TUNERS # 94E144-9, -13, -19, -20, -22, -24, -26, and -27

Turn the set on and allow 15 to 20 minutes warm-up period.
1. Set channel selector to the lowest channel operating in the area.
2. Set the fine tuning to the center of its range.
3. Set other controls for normal picture and sound.
4. Using a 1/8 inch non-metalic alignment tool, carefully adjust the oscillator slug for best picture and sound. (Note; this is not necessarily the point of loudest sound.) If two slugs are visible at the front of the tuner, adjust the one nearest the top of the tuner chassis. Repeat this procedure for the remaining stations, adjusting them in order of the channel number from the lowest to the highest.

VHF RF AND MIXER ALIGNMENT FOR TUNERS # 94E144-9, -13, -19, -20, -22, -24, -26, and -27

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⓣ. Low side to chassis.	A201, A202	Adjust for response similar to Fig. 201 with markers above 90%.
2.	"	"	85MC	83.25MC 87.75MC	6	"	A203	Adjust for response curve similar to Fig. 201. Adjust for maximum amplitude and flat-topped appearance with markers properly positioned.
3.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any high band channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. If markers fall below 70% on any low band channel, make compromise adjustment of A203 with channel selector set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

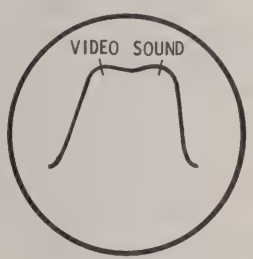
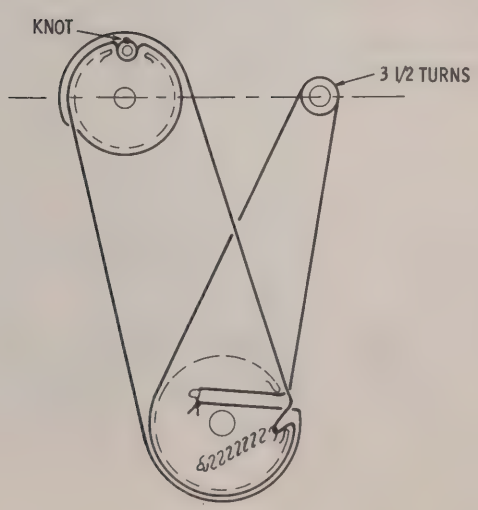
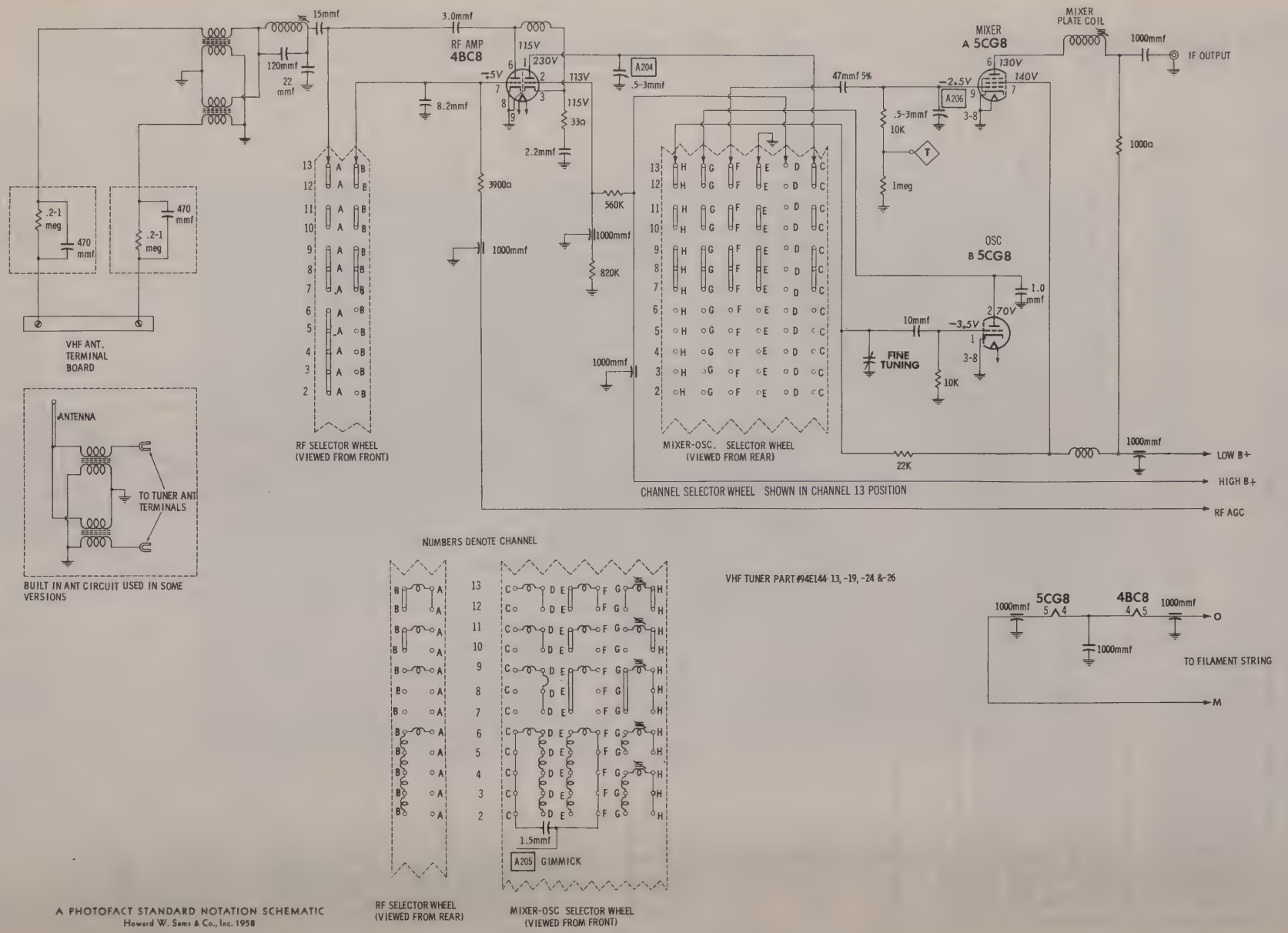


FIG. 201



DRIVE CORD STRINGING



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE VHF TUNER SCHEMATIC

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.

VHF OSCILLATOR ALIGNMENT FOR TUNERS # 94D151-1 AND-2

Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT FOR TUNERS # 94D151-1 AND -2

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (T). Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustments of A201 and A202, with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

FIG. 201

TUNER PARTS LIST & DESCRIPTION

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	
V202	Mixer-Osc.	5CG8	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	63A11-1	Centralab Sprague	RC-471 R-9177
K202	Antenna Isolation	470mmf, .3-1meg	63A11-1	Centralab Sprague	RC-471 R-9177

COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201	Ant. Trans. Assy.	94D131-68	
L202	IF Trap Coil	94D131-64	
L203	IF Trap Coil	94D131-51	Core part #94D131-77
L204	Mixer Screen Coil	94D131-65	
L205A	Ant., RF, Mixer Grid, Osc. Coils	94D131-52	Channel 2
B	"	94D131-53	Channel 3
C	"	94D131-54	Channel 4
D	"	94D131-55	Channel 5
E	"	94D131-56	Channel 6
F	"	94D131-57	Channel 7

ITEM No.	USE	ADMIRAL PART No.	NOTES
L205G	Ant., RF, Mixer Grid, Osc. Coils	94D131-58	Channel 8
H	"	94D131-59	Channel 9
I	"	94D131-60	Channel 10
J	"	94D131-61	Channel 11
K	"	94D131-62	Channel 12
L	"	94D131-63	Channel 13
L206	Mixer Plate Coil	94D151-50	Core part #94D131-78

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	150K	47Ω	5Ω	5.5Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	3BZ6	110K	▲ 68Ω	5.5Ω	6Ω	† 470Ω	† 470Ω	130K		
V3	3CB6	.1Ω	150Ω	6Ω	7Ω	■ 470Ω	■ 470Ω	0Ω		
V4	6AW8A	0Ω	100K	† 47K	10Ω	11Ω	● 100Ω	4000Ω	■ 8200Ω	■ 5700Ω
V5	3BU8	■ 180Ω	8200Ω	1.8meg	1Ω	1.5Ω	■ 11K	† 340K	† 47K	■ 4.7meg
V6	3DT6	16.5Ω	680Ω	7Ω	7.5Ω	† 330K	■ 8200Ω	560K		
V7	12CU5	¶	500K	10Ω	7.5Ω	500K	† 220Ω	† 370Ω		
V8	7AU7	● † 1.1meg	220K	● 150K	1Ω	1Ω	† 12K	† 1.4meg	3300Ω	0Ω
V9	12DB5	† 18K	● 290Ω	2.2meg	11Ω	13Ω	2.2meg	● 290Ω	NC	† 765Ω
V10	6CG7	† 5600Ω	500K	1000Ω	13Ω	14.5Ω	† 82K	110K	1000Ω	0Ω
V11	25CD6GB	TP	17.5Ω	0Ω	NC	470K	TP	22Ω	† 10K	TOP CAP ‡9Ω
V12	19AU4GTA	NC	NC	¶	NC	† 0Ω	NC	14.5Ω	17.5Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡459Ω
V14	21CEP4A	1.5Ω	39K	‡250K	† 0Ω	NC	NC	● 160K	3Ω	
V15	6AU6	3.3meg	0Ω	0Ω	.1Ω	†† 6000Ω	†† 46K	0Ω		
V16	6AU8	0Ω	3.3meg	†† 220K	0Ω	.1Ω	0Ω	3.3meg	†† 16K	†† 16K
V17	6BN6	220Ω	18Ω	0Ω	.1Ω	†† 48K	†† 1000Ω	†† 1000Ω		
V18	6AL5	1.5meg	2.2meg	0Ω	.1Ω	1.5meg	0Ω	2.2meg		
V19	6BJ7	1.5meg	2.2meg	0Ω	0Ω	.1Ω	40K	9.5Ω	2.2meg	1.5meg
V20	6CM7	NC	NC	0Ω	0Ω	.1Ω	†† 2400Ω	2.5meg	NC	NC
V21	6CM7	†† 2200Ω	NC	0Ω	0Ω	.1Ω	†† 2400Ω	2.5meg	2.5meg	0Ω
V22	6X4	87Ω	NC	0Ω	.1Ω	TP	87Ω	¶		
V201	2BN4	0Ω	3.7meg	3Ω	3.5Ω	† 9200Ω	0Ω	3.7meg		
V202	5CG8	10K	■ 8600Ω	0Ω	3.5Ω	5Ω	■ 2800Ω	■ 12K	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECT IN THE ASSOCIATED CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 250V SOURCE.

†† MEASURED FROM PIN 7 OF V24.

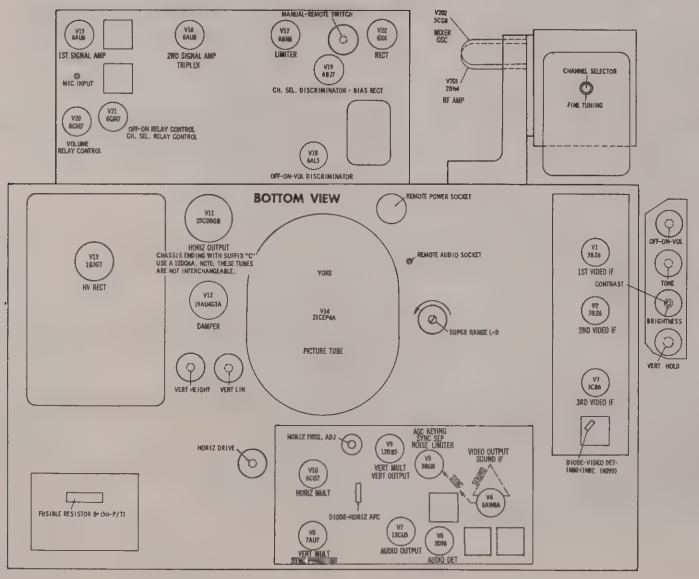
‡ MEASURED FROM PIN 3 OF V12.

■ MEASURED FROM 150V SOURCE.

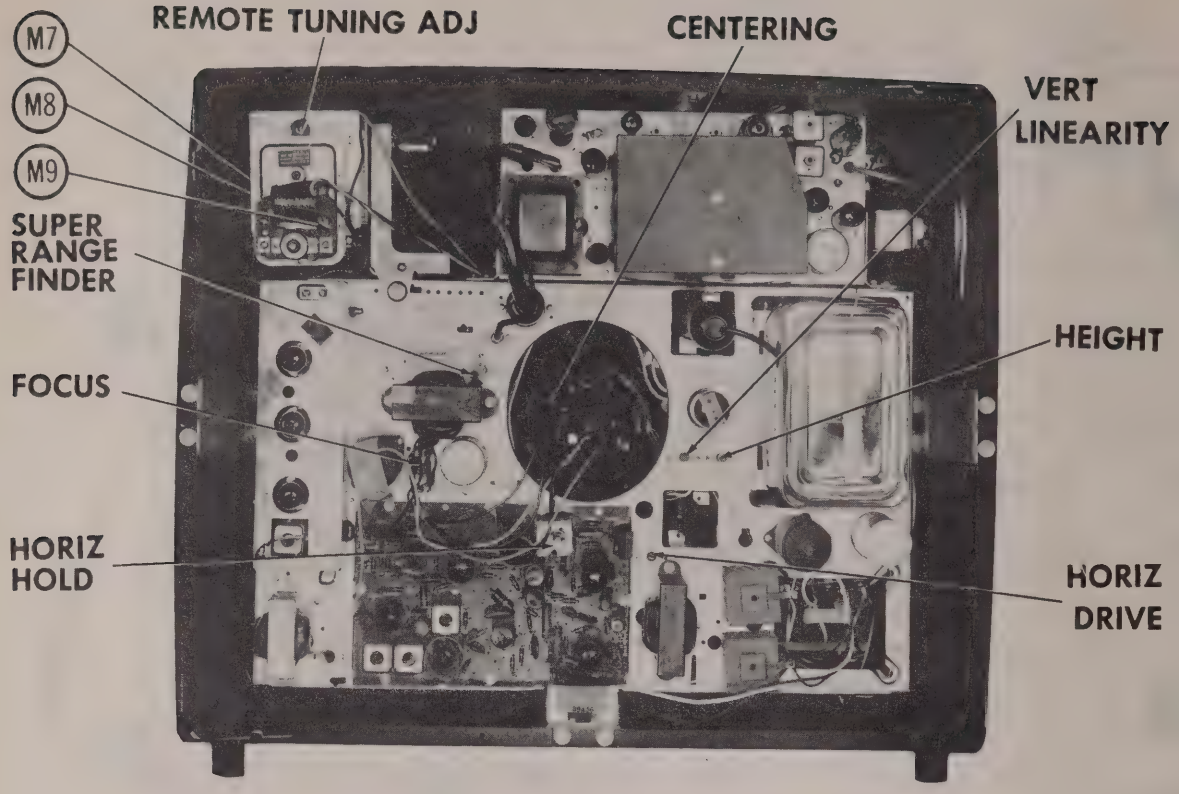
▲ MEASURED FROM PIN 7 OF V4.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 metal screws holding the glass retainer clamp. Tilt the safety glass out at the bottom and lower to remove.

SPECIAL ADJUSTMENTS

A. AGC
To adjust the super range finder control, set the control completely counter clockwise. Tune in the strongest station in the area and advance the control to the point where the picture distorts or a buzz is heard in the sound. Back off from this position until the picture remains stable. NOTE: Keep the control set as far counter clockwise as possible to maintain good picture quality.

B. Focus
The focus may be varied in steps by the position of a plug in the focus adjustment board.

C. Remote Tuning
Remove 9 metal screws holding the rear cover and remove the rear cover. The selection of channels to be tuned may be adjusted through a recessed hole directly above the tuning motor as the channel selector is rotated. Turn the adjustment screws "IN" for channels to be selected and "OUT" for channels not to be received.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSE DEVICE

A 5Ω fusible resistor (R95) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.

2. Set the brightness and contrast controls for a normal picture.

3. Turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

4. Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.

5. Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the horizontal drive trimmer (R7) until white lines disappear.

6. If in step 5 the horizontal drive was adjusted, tune in a TV station and repeat steps 3 and 4. Check horizontal sync by switching off channel and back again.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the front.
2. Remove 5 wood screws from the rear cover. Remove the rear cover.
3. Remove 2 wood screws holding the antenna terminal board.
4. Remove the speaker leads, picture tube socket, HV lead and yoke clamp.
5. Remove 2 wood screws holding the top chassis brace.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL WG-5041A

TRADE NAME	Airline	MODELS WG-4041A, WG-4051A, WG-4141A, WG-4151A, WG-5040A, WG-5041A, WG-5051A, WG-5140A, WG-5141A, WG-5151A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois	
TYPE SET	Television Receiver	
TUBES	Fourteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 145 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the rear cover. Supply power to the receiver. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, through a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim at the top of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

Adjust the beam alignment magnet on the neck of the picture tube for best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

A 7.5Ω fusible resistor (R62) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

AIRLINE MODELS WG-4041A, WG-4051A, WG-4141A, WG-4151A, WG-5040A, WG-5041A, WG-5051A, WG-5140A, WG-5141A, WG-5151A

SET 394 FOLDER 2

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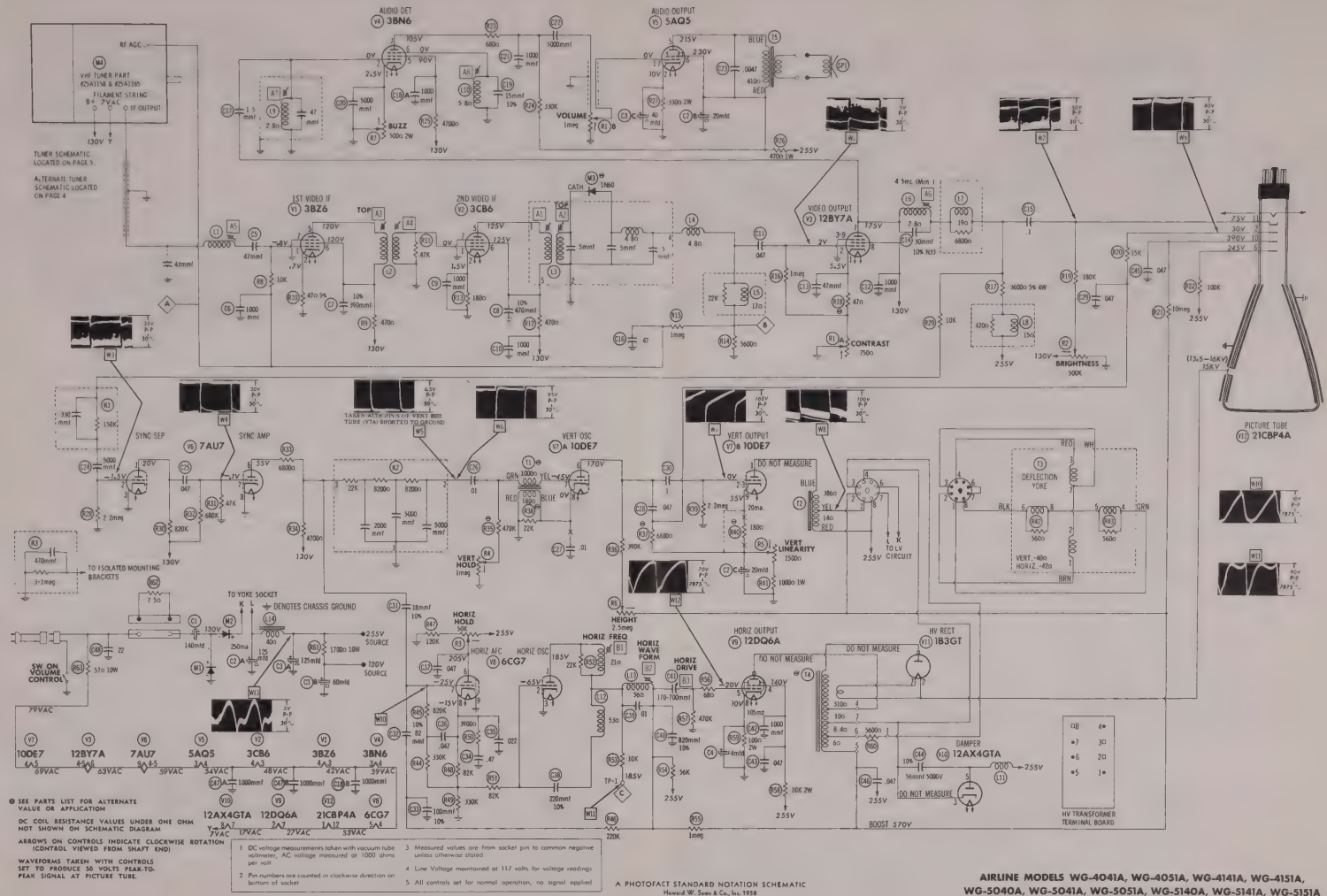


⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

3 Measured values are from socket pin to common negative unless otherwise stated

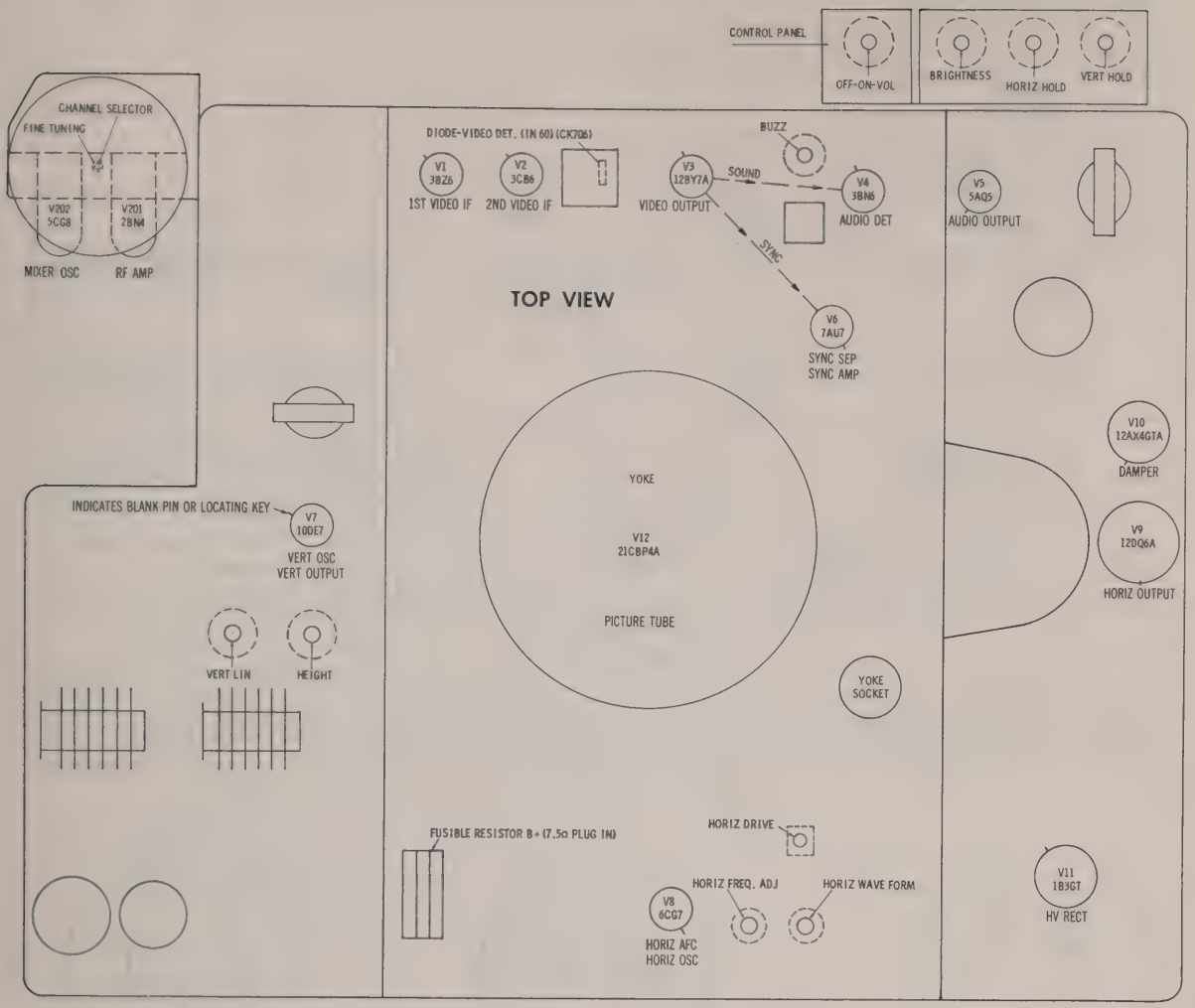
4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

AIRLINE MODELS WG-4041A, WG-4051A, WG-4141A, WG-4151A, WG-5040A, WG-5041A, WG-5051A, WG-5140A, WG-5141A, WG-5151A

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

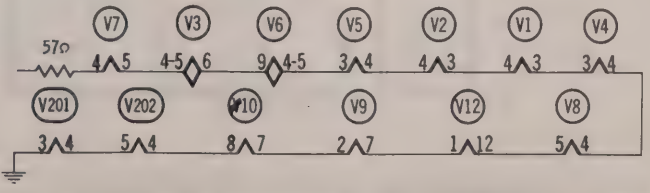
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R62), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, Diode (M3), V3**
No pic, no sound, has snow - **V201, V202**
No pic, has sound, has raster - **V3, V12**
Has pic, no sound - **V4, V5**

SYNC FAILURE
No vert. sync - **V6**
No horiz. sync - **V6, V8**
No vert. or horiz. sync - **V6**

SWEEP FAILURE
No raster, has sound - **V8, V9, V10, V11, V12**
No vertical deflection - **V7**
Poor vert. linearity of foldover - **V7**
Poor horiz. linearity or foldover - **V8, V9, V10**
Narrow picture - **V8, V9, V10, M1, M2**
Vert. off freq. - **V7**
Horiz. off freq. - **V8**

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Keep sweep generator output set for approximately 4 volts peak to peak on the scope throughout the "Video IF Alignment".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 3CB6 (V2). Low side to chassis.	44.0MC (10MC Swp)	42.8MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across video det. load).	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	High side to pin 1 (grid) of 3BZ6 (V1). Low side to chassis.	"	42.8MC 43.9MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
3.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"	A5, Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. If necessary, repeat steps 1, 2, and 3.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.005mfd	High side to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A6	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength by use of an attenuator, or similar device, until a hiss is heard in the sound.
Adjust A7, A8 and buzz control (R7) for maximum undistorted sound and MINIMUM buzz. If the hiss disappears during alignment, further reduce the signal until the hiss returns.

FOR TUNER ALIGNMENT INSTRUCTIONS SEE PAGE 6.

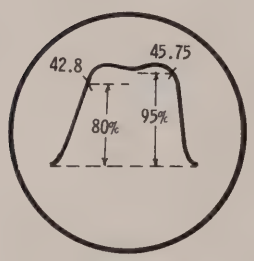


FIG.1

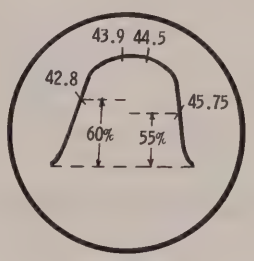


FIG.2

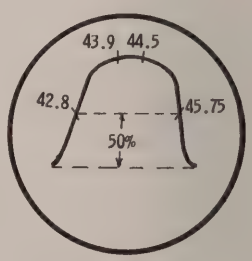
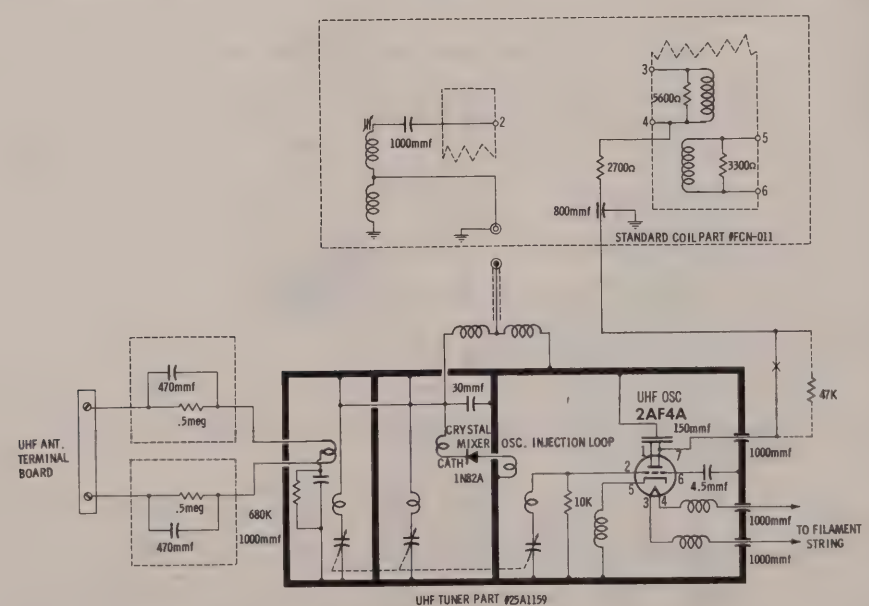
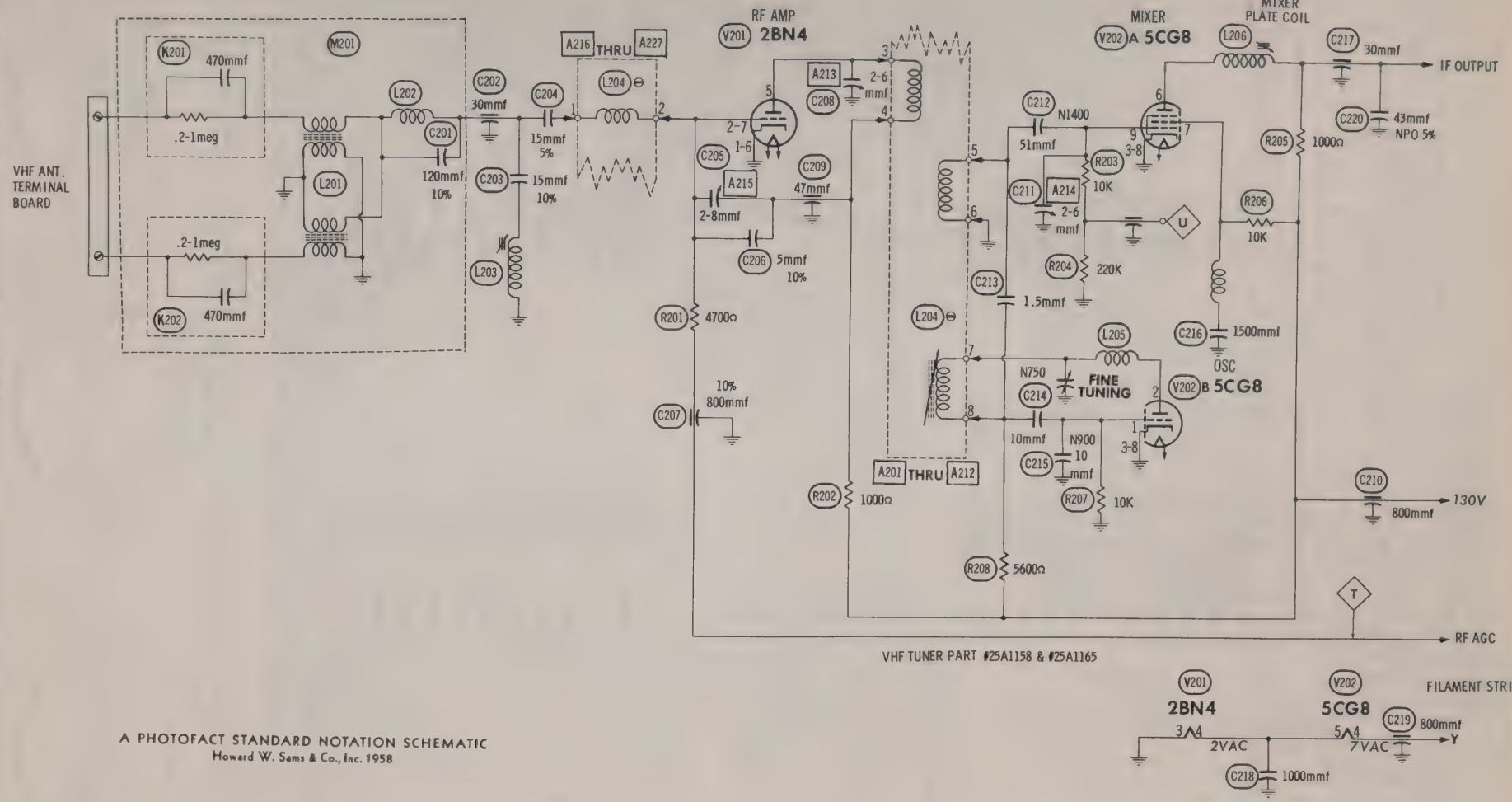


FIG.3



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE TUNER SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUNER SCHEMATIC

SET 394 FOLDER 2

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ . Low side to chassis.	A213, A214	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202.
3.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 203) to plate of 1st. video IF tube. Low side to chassis.	A215	Reduce bias to -1.5 volts. Adjust for MINIMUM response.
4.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

ANTENNA TRAP ALIGNMENT

Some types of interference can be reduced by adjusting A228. Observe the picture and adjust A228 for MINIMUM interference.

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

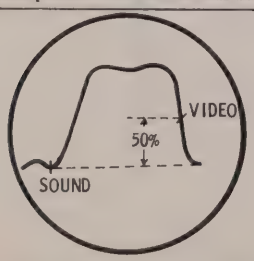


FIG. 201

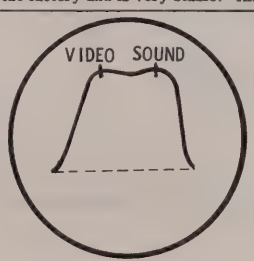


FIG. 202

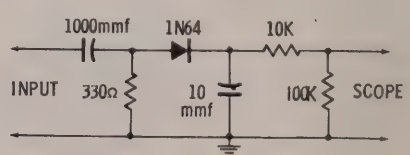
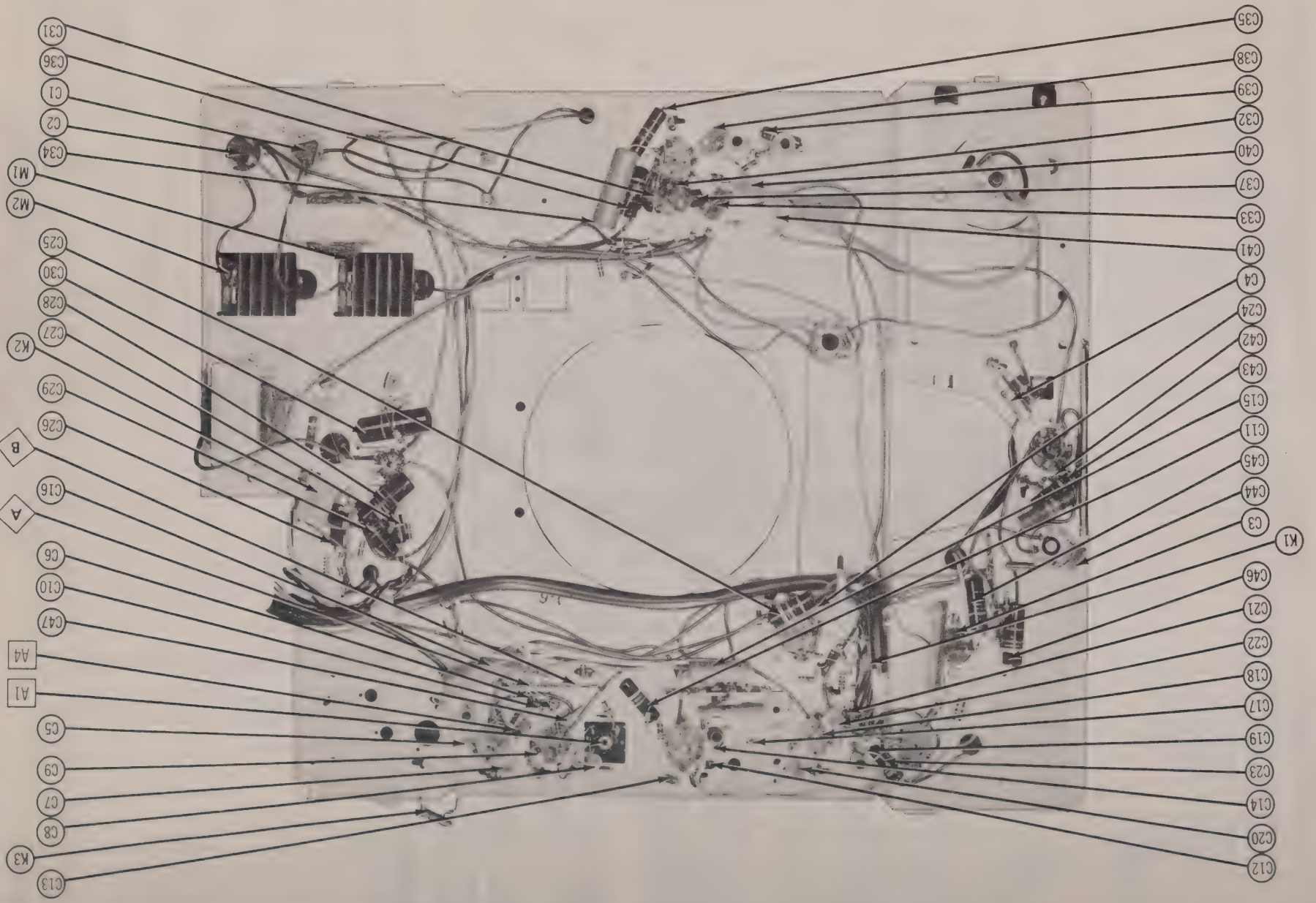


FIG. 203

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3DB6	
V2	2nd Video IF Amp	3CB6	
V3	Video Output	12BY7A	
V4	Audio Det	3BN6	
V5	Audio Output	5AQ5	
V6	Sync Sep. -Sync Amp	7AU7	

ITEM No	USE	TYPE	NOTES
V7	Vert. Osc. -Vert. Output	10DE7	
V8	Horiz. AFC-Horiz Osc.	6CG7	
V9	Horiz. Output	12DQ6A	
V10	Damper	12AX4GTA	
V11	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	AIRLINE PART No	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No	
V12	21CBP4A		21CBP4 ① 21CBP4A ②		①"Silverama" ③ ②"Silver Screen 86"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA							
	CAP	VOLT	AIRLINE PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No	
C1	140	150	45X421	AFH51-33	XA0281	FPU7	TMS-24	T-055	TVL-1438	
C2A	135	300	45X431	AFH4-03-80	-B0280	-FPB18		-Q-248	*R2376	
B	270	300			-BRB30-150	-VC26		-WT-3516		
C	20	50								
C3A	125	300	45X420	AFH3-99-82	-D0045	-FP420-76	TMT-38	-T-115	TVL-3876.8	
B	60	300			-BR505	-VC76		-WT-0550		
C	40	50								
C4	4	30	45X418	PRS150Y4	BBR4-50	TC30	TD-4-50	MT-0504	TE-1303	

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	AIRLINE PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No.	MALLORY PART No	SPRAGUE PART No	
C5	47			SI 47		DS-470	LT5Q47	GP-47	UC-5447	5GA-Q47
C6	1000			BPD-001		DD-102	BYA501	ED-1000	DC5II	5HK-D1
C7	390					D6-391	5R5T39	ED-390		M8-389 10%
C8	470					D6-471	5R5T47	ED-470		M8-347 10%
C9	1000			BPD-001		DD-102	BYA501	ED-1000	DC5II	5HK-D1
C10	1000			BPD-001		DD-102	BYA501	ED-1000	DC5II	5HK-D1
C11	.047	200		P488N-047		DF-503	CUB4D47	GP-4700	GEM-4147	47M-D47
C12	1000			BPD-001		DD-102	BYA501	ED-1000	DC5II	5HK-D1
C13	47			SI 47		D6-470	LT5Q47	GP-47	UC-5447	5GA-Q47
C14	30									N33 10%
C15	.1	400		P488N-1		DF-104	CUB4P1		GEM-401	47M-P1
C16	.47	200		P488N-47			CUB2P47		GEM-2047	47M-P47
C17	1.5			NPO-SI 1.5		TCZ-1R5	C10Y15C	TCO-1.5	2T-5515	5TCCB-V15
C18A	1000		80X3	BPD-2X001		DD3-102	BYC5DD1	ED3-001	DC5D2I	5HK-D1K
B	1000									
C19	15			NPO-DI 15		D6-150	L10Q15	ED-15		5TCC-C15 10%
C20	5000			BPD-008		DD-502	BYA5D8	ED-005	DC535	5HK-D5
C21	1000			BPD-001		DD-102	BYA501	ED-1000	DC5II	5HK-D1
C22	5000			BPD-005		DD-502	BYA5D8	ED-005	DC535	5HK-D5
C23	.0047	600		P488N-0047		D6-472	CUB4D47	GP-4700	GEM-6147	47M-D47
C24	5000			BPD-005		DD-502	BYA5D8	ED-005	DC535	5HK-D5
C25	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47
C26	.01	400		P488N-01		D6-103	CUB4S1	GP-10000	GEM-411	47M-S1
C27	.01	400		P488N-01		D6-103	CUB4S1	GP-10000	GEM-411	47M-S1
C28	.047	600		P488N-047		DF-503	CUB4S47		GEM-6147	47M-S47
C29	.047	200		P488N-047		DF-503	CUB2S47		GEM-4147	47M-S47
C30	.1	600		P488N-1		DF-104	CUB4P1		GEM-601	47M-P1
C31	18		RCM20B180K	1469-00018		D6-180	22R5Q18	ED-18		M8-418 10%
C32	82		RCM20B820K	1469-00082		D6-820	22R5Q82	ED-82		M8-482 10%
C33	100			1469-0001		D6-101	22R5T1	ED-100	MCB22S	M8-31 10%
C34	.47	200		P488N-47			CUB2P47		GEM-2047	47M-P47
C35	.033	200		P488N-033		DD-203	CUB4S33	ED-03	GEM-4123	47M-S33
C36	.047	300		P488N-047		DF-503	CUB2S47		GEM-4147	47M-S47
C37	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47
C38	220			1469-00022		D6-221	22R5T22	ED-220		M8-322 10%
C39	.01	400		P488N-01		D6-103	CUB4S1	GP-10000	GEM-411	47M-S1
C40	180		RCM30B821K	1464-00068			1R5T83	CY15C181K		M8-382 10%
C41	170- 700		17A271							
C42	1000			BPD-001		DD-102	BYA501	ED-1000	DC5II	5HK-D1
C43	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47
C44	56	5000	47X755							10%
C45	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47
C46	.047	400		P488N-047		DF-503	CUB4S47		GEM-4147	47M-S47
C47A	1000		80X3	BPD-2X001		DD3-102	BYC5DD1	ED3-001	DC5D2I	5HK-D1K
B	1000									
C48	12	400		P488N-23			CUB4P23		GEM-4023	47M-P23

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	750Ω	½	76X30	F1-2	RTV-648			Contrast
B	1meg	½		R2-51	Not Req.	✦ QU-1074	✦✦U2T8986	Volume
C	Switch			KS-1	Not Req.			
R2A	500K	½	40X423	B-59	A47-500K-S	QU-133	TA85L	Brightness
B	Shaft				Not Req.	Not Req.	Not Req.	
R3A	50K	½	40X434	B-51	A47-50K-S	QU-132	TA84L	Horiz. Hold
B	Shaft				Not Req.	Not Req.	Not Req.	
R4A	1meg	½	40X425	B-69	A47-1meg-S	QU-137	TA81L	Vert. Hold
B	Shaft				Not Req.	Not Req.	Not Req.	
R5A	1500Ω	½	40X399	AB-6	A47-1500-S	QU-109	TAP152L	Vert. Lin.
B	Shaft			AE-19	RN-3	TQ	Not Req.	
R6A	2.5meg	½	40X398	B2-62	A47-2.5meg-S	QU-139	TA85L	Height
B	Shaft			Not Req.	FSB-1/4	TQ	Not Req.	
R7	500Ω	2(WW)	40X397		39-500		FL-500	Buzz

* "Concentrikit" Equivalent: K-2 Kit, Base Elements & Shafts R1-106, PS-103 (Panel) R11-137, R1-126 (Rear) 76-1 (Switch)

✦✦ "ETA-LOC" Equivalent: FA75LL, OF125A, RU15L, SI275, US-4L

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No	RATING OHMS	WATT	AIRLINE PART No.	NOTES
R8	10K			
R9	470Ω			
R10	47Ω 5%			
R11	47K			
R12	470Ω			
R13	180Ω			
R14	5600Ω			
R15	1meg			
R16	1meg			
R17	36000 5%	4	43X331	
R18	47Ω	1		
R19	180K			
R20	15K			
R21	10meg			
R22	100K			
R23	680Ω			
R24	330K			
R25	4700Ω			
R26	4700Ω	1		
R27	2300Ω	1		
R28	2.2meg			
R29	10K			
R30	820K			
R31	47K			
R32	680K			
R33	6800Ω			
R34	4700Ω			
R35	470K			

ITEM No.	RATING OHMS	WATT	AIRLINE PART No.	NOTES
R36	390K			
R37	6800Ω			
R38	22K			
R39	2.2meg			
R40	180Ω			
R41	1000Ω	1		
R42	560Ω			
R43	560Ω			
R44	330K			
R45	820K			
R46	220K			
R47	120K			
R48	82K			
R49	330K			
R50	3900Ω			
R51	82K			
R52	22K			
R53	10K			
R54	56K			
R55	1meg		B84105	
R56	68Ω			
R57	470K			
R58	10K	2		
R59	100Ω	2		
R60	5600Ω			
R61	1700Ω	10	43X394	
R62	7.5Ω	10	43X380	
R63	57Ω	10	43X301	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA						NOTES
		AIRLINE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordorson PART No	Triad PART No
T1	Vert. Osc.	54X19-A	B6702	A-3003	V402	A-8125	28A03	A-87X
	Alt Vert. Osc.	54X19						
T2	Vert Output	51X198	Z1900①	A-3038①	V3071①	VO-100 ③	28S73 ③	A-118X ③
T3A	Horiz-Horiz (24 5MS	9A2403 ④	DF607	MDF-92	Y90T19/43	DY-16A	Y-45	Y-45 & NW2I
B	(90)-Vert (39MH)		①	①	①	③	③	
M5	Rear Cover & Centering Device	2A435						YC1
	Yoke Clamp	30X81						CL-1
T4	Horiz. Output	53X363C	FB419 ⑤ *‡	HVO-36 ③ * ‡	XO94 ③ * ‡	HO-383 *	FLY-16 ③ *‡	D-12I *
	Alt. Horiz. Output	53X362	FB419 ⑤ *‡	HVO-36 ③ * ‡	XO94 ③ * ‡	HO-383 *	FLY-16 ③ *‡	D-12I *

① Connect as autoformer.
② Use 9 to 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes resistors (R42, R43).
⑤ Use original rear cover, centering device and horizontal damping network. Connect same as original.
‡ This part may be superceded by Perta Manufacturer's introduction of special unit for this application.

***HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA**

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
4	9	9	9	8	9	4
7	7	7	7	3	7	3
8	See Note ⑤ NC	See Note ⑤ NC	See Note ⑤ NC	2	See Note ⑤ NC	2
5	1	1	1	1	1	1

⑤ Install new damping network consisting of approximately 90mmf in series with resistor (R60) across horizontal yoke terminals #3 and #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T5	6600Ω	3-4Ω	51X185	Z1110	A-3028	AU-803①	A-3877 ①	24B48	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP	AIRLINE PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	12A527	5A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No	Meissner PART No	Merit PART No	Miller PART No.	Ram PART No	
L1	1st. Video IF	9A2389	17-4634	TV-131	4302	VF-4	
L2	2nd. Video IF	9A2390					
L3	3rd. Video IF	9A2391					Complete Assy
L4	Resonant Choke	9A2378					30 Microhenries
L5	Shunt Peaking Coil	36A32	19-2300 *	TV-199 *	6155 *		280 Microhenries, wound on 22K resistor
L6	4.5MC Trap	9A2366	30-1004	TV-151	1449 ▲	SF-3	
L7	Series Peaking Coil	36A35	19-6400 *	TV-190 *	6133 *	VP-7 ▫	350 Microhenries, wound on 6800Ω resistor
L8	Shunt Peaking Coil	36A36	19-4301 †	TV-197†	6154 †		220 Microhenries, wound on 4700 resistor
L9	Sound IF	9A2400	17-1028	TV-154	1470A ▲		
L10	Quadrature Coil	9A2387	30-1005	TV-132	1480		
L11	R.F. Choke	9A2380	19-1001	RC-562	6804		1.5 Microhenries

* Parallel with 22K resistor.
# Parallel with 6800Ω resistor.
† Parallel with 4700 resistor.
▲ Disregard tap.
▫ Drill mounting holes.

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No	Meissner PART No	Merit PART No.	Miller PART No.	Ram PART No	Thordorson PART No
L23	74Ω *		9A2371		TV-185	6311 ▲		HS-7
L23	56Ω		9A2372			6315		HS-5

Horiz. Freq.
* Tapped @ 83Ω
Horiz. Waveform
▲ Enlarge mounting hole

FILTER CHOKE

ITEM No	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES	INDUCTANCE @ CURRENT 1000 ~(1)	AIRLINE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordorson PART No	Triad PART No
L24	250A	40Ω	1 Hy	52X95-8	C8037 ①	C-2991 ①		C-2336 ①	26C4U	C-37X

① Drill new mounting hole

RECTIFIERS

ITEM No	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	AIRLINE PART No	FEDERAL PART No	GENERAL ELECTRIC PART No	INTERNATIONAL PART No	SARKES TARZIAN PART No.	
M1	250A	66X34-C ①	1090A ①	IN1007 ②	RS3008L ① SD94A ②	300 ① M500 ②	① Selenium type. ② Germanium type. ③ Silicon type.
M2	250A	66X14-C ①	1090A ①	IN1007 ②	RS3008L ① SD94A ②	300 ① M500 ②	

CRYSTAL DIODES

ITEM No	ORIG. TYPE	REPLACEMENT DATA			NOTES
		AIRLINE PART No	CBS PART No.	SYLVANIA PART No	
M3	1N80 *		1N80	1N80	Video Detector (Pigtail)

* Some versions may use CK706 in this application

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA	
K1	Sync Coupling	330mmf, 150K	76X23	Sprague	PRC-8
K2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω 620Ω	76X7	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-104 115TMJ 1408-01 V-1
K3	Chassis Isolation	470mmf, .3-1meg	76X21	Centralab Sprague	RC-47I R-II77

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuner	25A1158	VHF - Models WG-4041A, 4051A, 5041A, 5051A
	Tuner	25A1165	VHF - Model WG-5040A
	Tuner	25A1159	UHF - Models WG-4141A, 4151A, 5140A, 5141A, 5151A
	Tuner Cover	25A1164	Used with above VHF tuners to convert to UHF-VHF
M5	Centering Device	2A435	Includes yoke cover
	Magnet	2A476	Beam alignment used in some versions.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	Dark *
Safety Glass	17X194-2	Clear *
Mask	S-38A345	*
Knob	10A863-2	Channel Selector (Brown) *
Knob	10A857-2	Fine Tuning (Brown) *
Knob	10A897-1	On-off-volume (Brown) *
Knob	10A896-1	Contrast (Brown) *
Knob	10A898-1	Secondary Controls (Brown) *
Knob	10A863-4	Channel Selector (Gray) *
Knob	10A857-4	Fine Tuning (Gray) *
Knob	10A893-2	UHF Tuning (Gray) *
Knob	10A894-2	UHF Indicator (Gray) *
Knob	10A897-3	On-off-volume (Gray) *
Knob	10A896-3	Contrast (Gray) *
Knob	10A898-3	Secondary controls (Gray)*
Safety Glass	17X195	†
Mask	S-38A417	†
Knob	10A907	Channel Selector (Gray) †
Knob	10A906	Fine Tuning (Gray) †
Knob	10A909	UHF Tuning (Gray) †
Knob	10A908	UHF Indicator (Gray) †
Knob	10A897-5	On-off-volume (Gray) †
Knob	10A896-5	Contrast (Gray) †
Knob	10A905	Secondary Controls (Gray) †
Leg	51X4-5	Models WG-4041A, 4141A, 5041A, 5141A
Leg	51X4-4	Models WG-4051A, 4151A, 5051A, 5151A
Leg	51X4-8	Models WG-5040A, 5140A

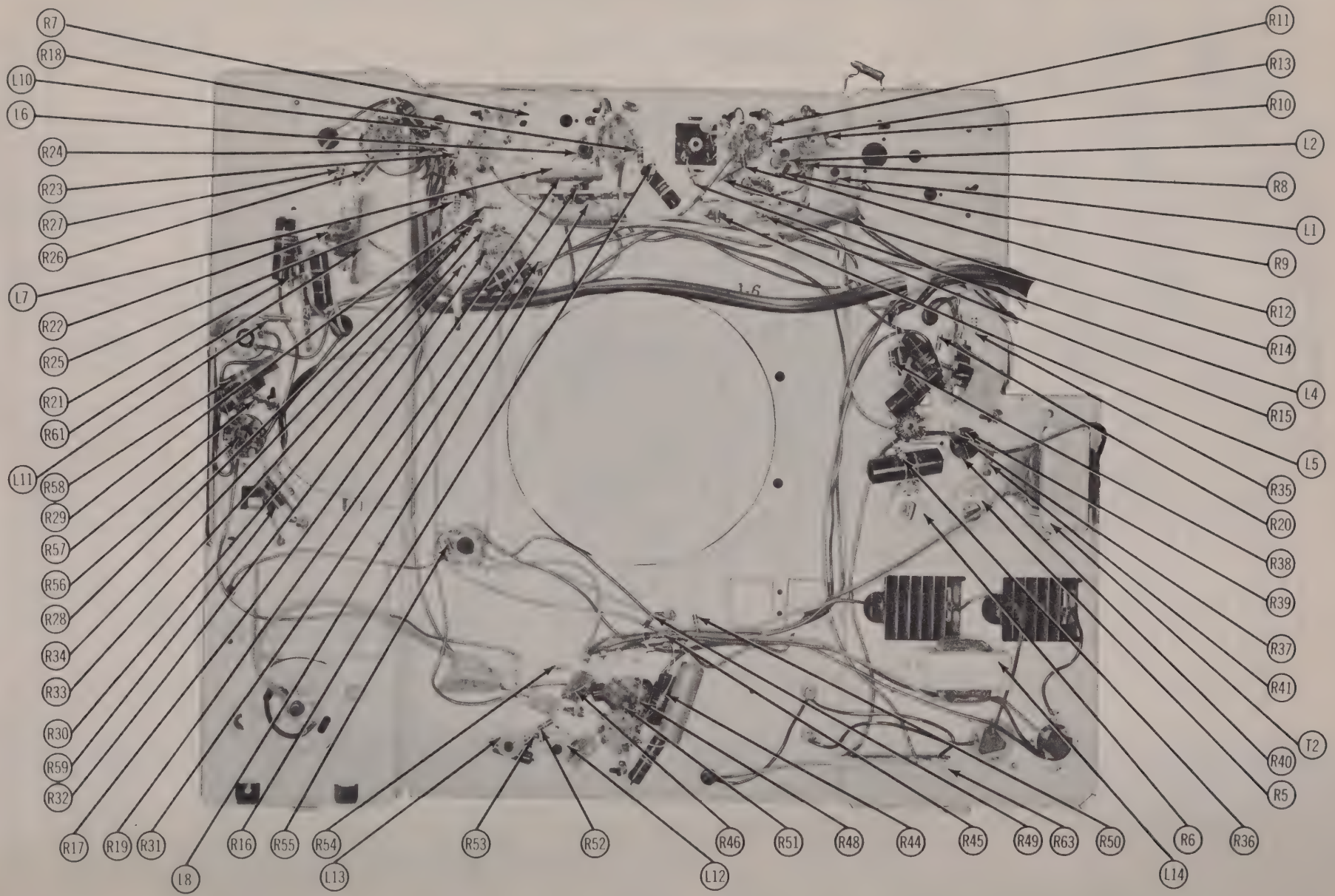
* Models WG-4041A, 4051A, 4141A, 4151A, 5041A, 5051A, 5141A, 5151A
† Models WG-5040A and 5140A

WIRING DATA

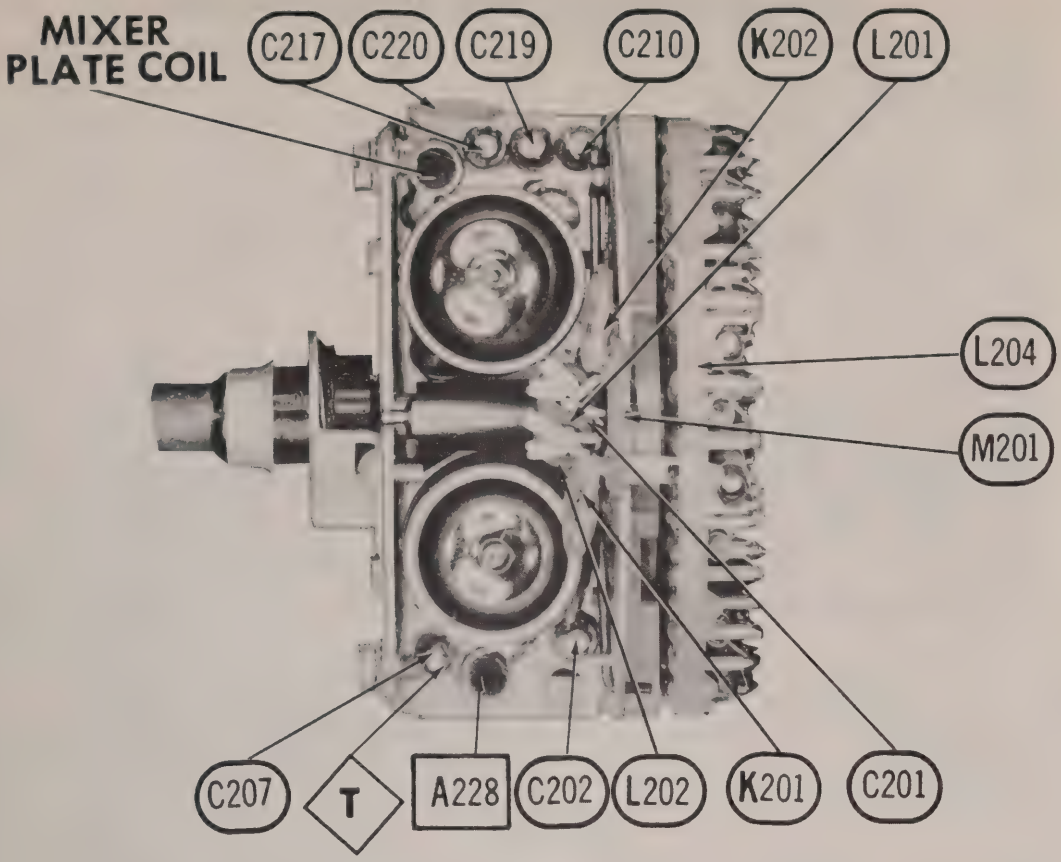
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8855 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

AIRLINE MODELS WG-4041A, WG-4051A, WG-4141A, WG-4151A, WG-5040A, WG-5041A, WG-5051A, WG-5140A, WG-5141A, WG-5151A

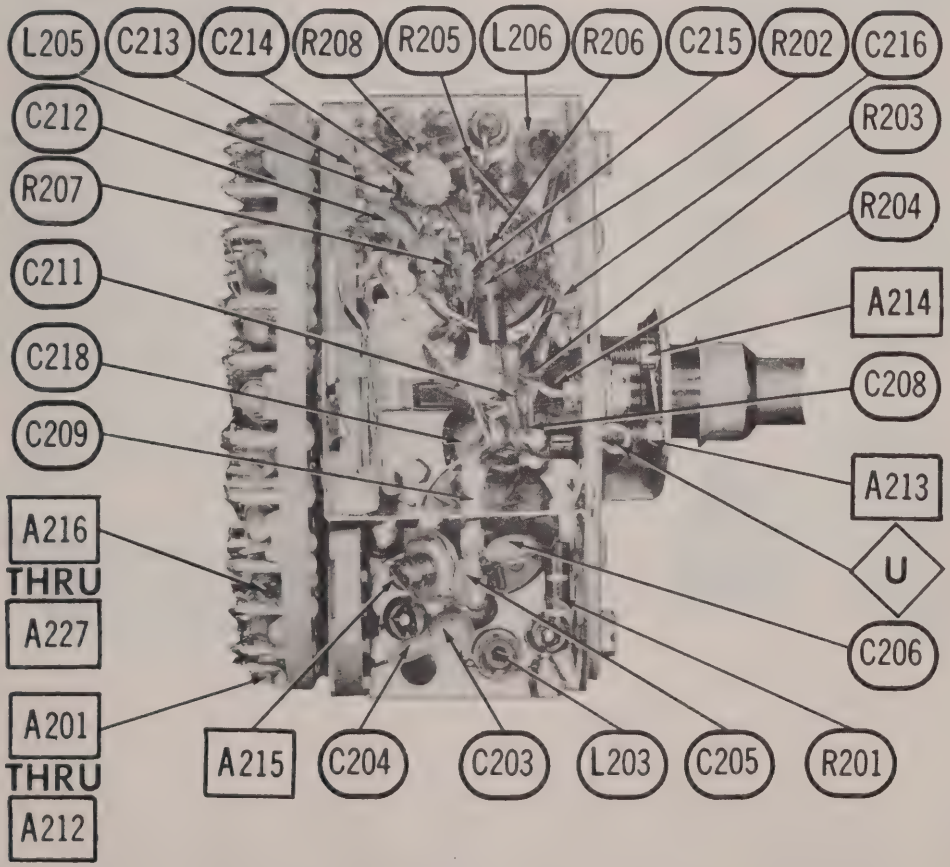
FOLDER 2



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	120			NPO-DI 120	DD-121	L10T12	ED-120		5TCC-T12	10%
C202	30									
C203	15			NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C204	15				TCZ-15		TCO-15			5%
C205	2-8									
C206	5			NPO-DI 5	DD-050	C10V5C	ED-5	ZT-555	5TCC-Q5	10%
C207	800									10%
C208	2-6									
C209	47									
C210	800									
C211	2-6									
C212	51									N1400
C213	1.5			NPO-SI 1.5	TCZ-1R5	CTA6V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C214	10			N750-SI 10	TCN-10	CTA6Q1U	TC7-10	NT-541	5TCU-Q1	N750
C215	10									N900
C216	1500			BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	①
C217	30									
C218	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C219	800									
C220	43									NPO 5%

① Some versions may use 1000mmf in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R201	4700Ω			
R202	1000Ω			
R203	10K			
R204	220K			

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R205	1000Ω			
R206	10K			
R207	10K			
R208	5600Ω			

COILS (RF-IF)

ITEM No.	USE	AIRLINE PART No.	NOTES
L201	Ant. Trans.	31T-3066	
L202	IF Trap Coil	34A763	
L203	IF Trap Coil	34A762	

ITEM No.	USE	AIRLINE PART No.	NOTES
L204	Coil Assy.	31T-3068-004	Includes rotor- Note 1
L205	Osc. Plate Coil	25A-211-01	
L206	Mixer Plate Coil	31U-580	

Note 1. Part #31T-3068-011 used in tuner #25A1165.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .2-1meg	13P-198	
K202	Antenna Isolation	470mmf, .2-1meg	13P-198	

MISCELLANEOUS

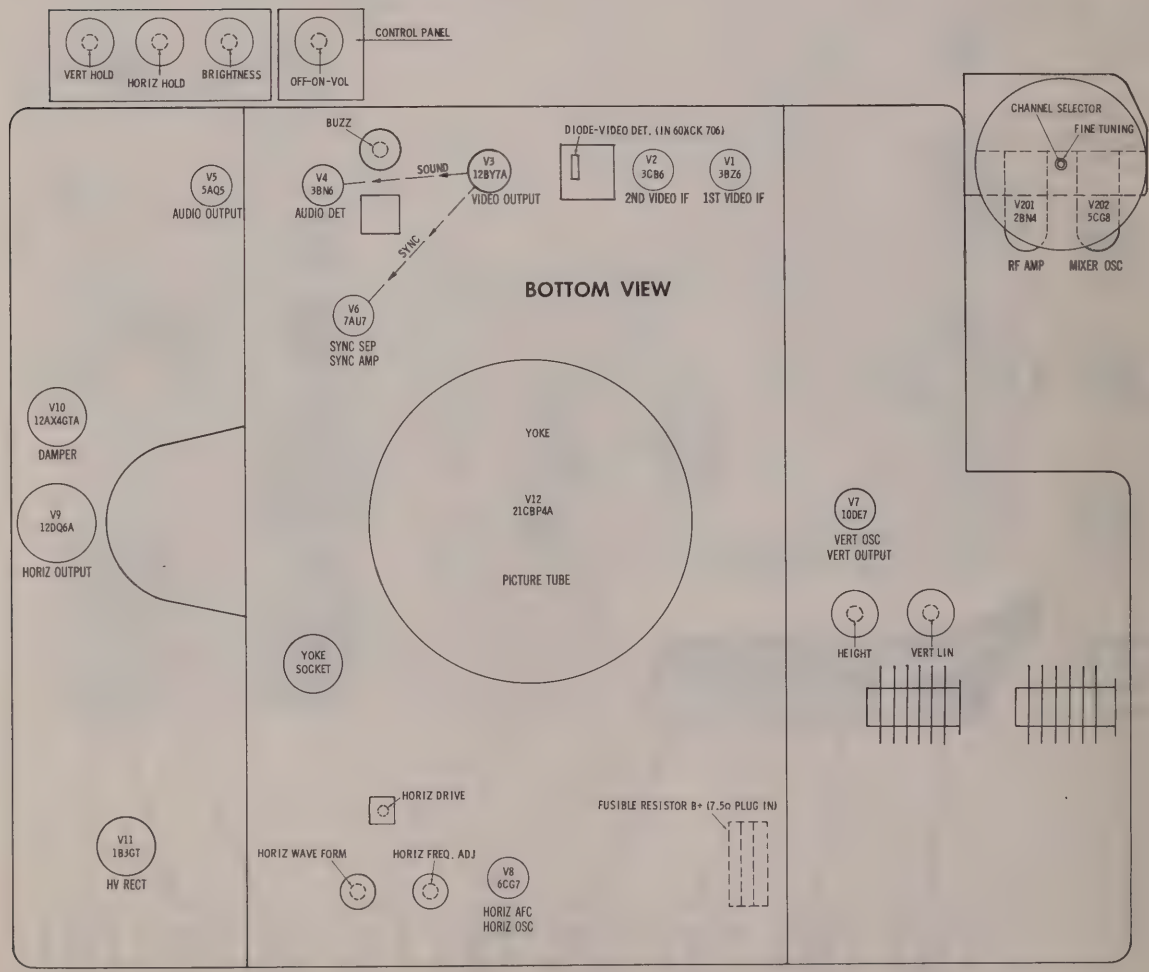
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M201	Antenna Input Assy.	31T-2086-01	Includes L201, L202, K201, K202
	Osc. Slug	15A-276	(12 Used)
	Contact Spring	23A-132	(6 Used)

CHASSIS TOP VIEW

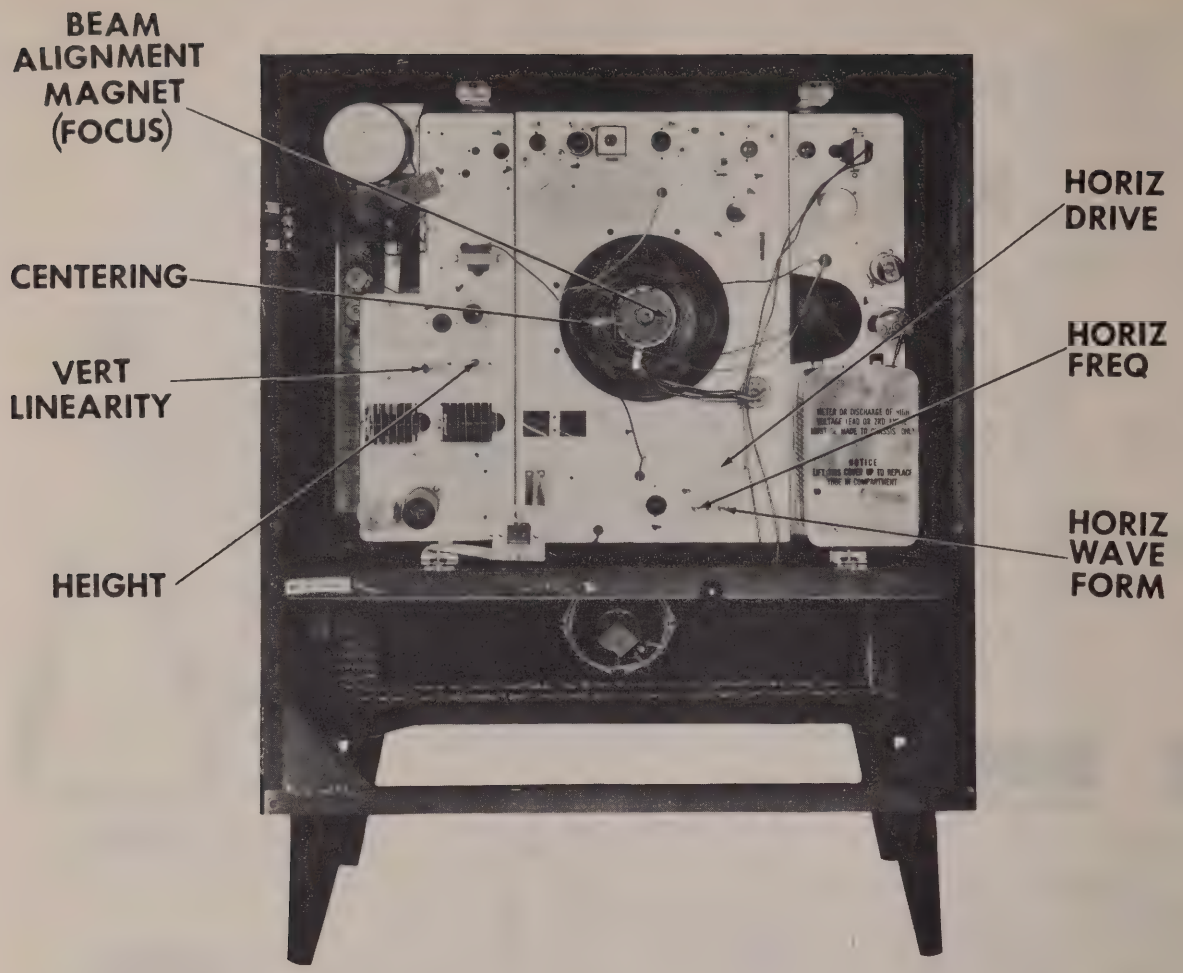
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1meg	47Ω	10Ω	11Ω	† 2200Ω	† 2200Ω	0Ω		
V2	6CB6	.1Ω	180Ω	11Ω	12Ω	† 2200Ω	† 2200Ω	0Ω		
V3	12BY7A	• 230Ω	1meg	0Ω	17Ω	17Ω	14Ω	† 3600Ω	† 1700Ω	0Ω
V4	3BN6	• 290Ω	2.8Ω	10Ω	9.5Ω	† 6400Ω	5.8Ω	† 330K		
V5	5AQ5	0Ω	330Ω	13Ω	12Ω	† 880Ω	† 470Ω	0Ω		
V6	7AU7	† 820K	2.2meg	0Ω	13Ω	13Ω	† 13K	47K	0Ω	14Ω
V7	10DE7	† 400Ω	2.2meg	2.2meg	18Ω	17Ω	• ‡ 1.6meg	• 850K	170Ω	1600Ω
V8	6CG7	† 56K	410K	0Ω	9.5Ω	8.5Ω	• † 220Ω	1.4meg	410K	0Ω
V9	12DQ6A	TP	4Ω	NC	† 10K	470K	NC	7Ω	100Ω	TOP CAP ‡ 10Ω
V10	12AX4GTA	NC	NC	¶	NC	† .1Ω	NC	4Ω	1.5Ω	
V11	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡ 320Ω
V12	21CBP4A	7Ω	• 23K	PIN 6 † 100K	PIN 10 ‡ 10meg	PIN 11 • 290K	PIN 12 8.5Ω			
V201	2BN4	0Ω	1meg	0Ω	.5Ω	† 2700Ω	0Ω	1meg		
V202	5CG8	10K	† 7300Ω	0Ω	1.5Ω	.5Ω	† 2700Ω	† 12K	0Ω	230K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 255V SOURCE.
‡ MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Set the contrast control for a normal picture.

Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Connect the vertical amplifier of the scope thru a low capacity probe to point ◇ . Low side to chassis. Adjust the horizontal waveform slug (B2) until the waveform is similar to Fig. 4. While making this adjustment, keep the picture in sync with the horizontal hold control.

Turn the horizontal hold control fully clockwise. Turn B1 clockwise until the picture is just ready to pull in sync.

Turn the horizontal hold control fully counter clockwise. The picture should remain in sync. Switch off channel and back again. Retouch B1 if necessary.

While receiving a signal from a station, turn the contrast control fully counter clockwise and turn the brightness up so that the picture appears to be washed out. Turn the horizontal drive trimmer (B3) clockwise until white vertical bars appear in the left center of the raster, then slowly turn B3 counter clockwise until the bars disappear.

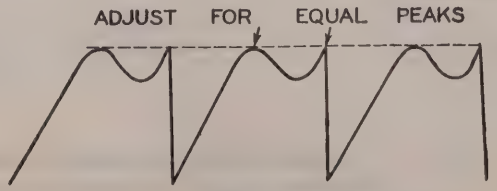


FIG. 4

TRUETONE MODELS 2D1824A, B, 2D1825A, B, 2D1826A, B, 2D1827A, B

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the front.
2. Remove 7 wood screws holding the rear cover. Remove the rear cover.
3. Remove 3 wood screws holding the control panel to the front of the cabinet.
4. Remove 2 wood screws holding the AC interlock.
5. Remove the speaker leads, yoke leads, picture tube socket, HV lead and ground lead between chassis and picture tube mounting.
6. Remove 2 screws holding the top chassis braces.
7. Remove 2 chassis bolts from the bottom.
8. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 2D1824A

TRADE NAME	Truetone MODELS 2D1824A, B, 2D1825A, B, 2D1826A, B, 2D1827A, B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Thirteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 145 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the rear cover and suppling power to the receiver. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, through a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws from the trim strip at the top of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10 or 6 and 2.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE DEVICE

A 10Ω fusible resistor (R58) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

TRUETONE MODELS 2D1824A, B, 2D1825A, B, 2D1826A, B, 2D1827A, B

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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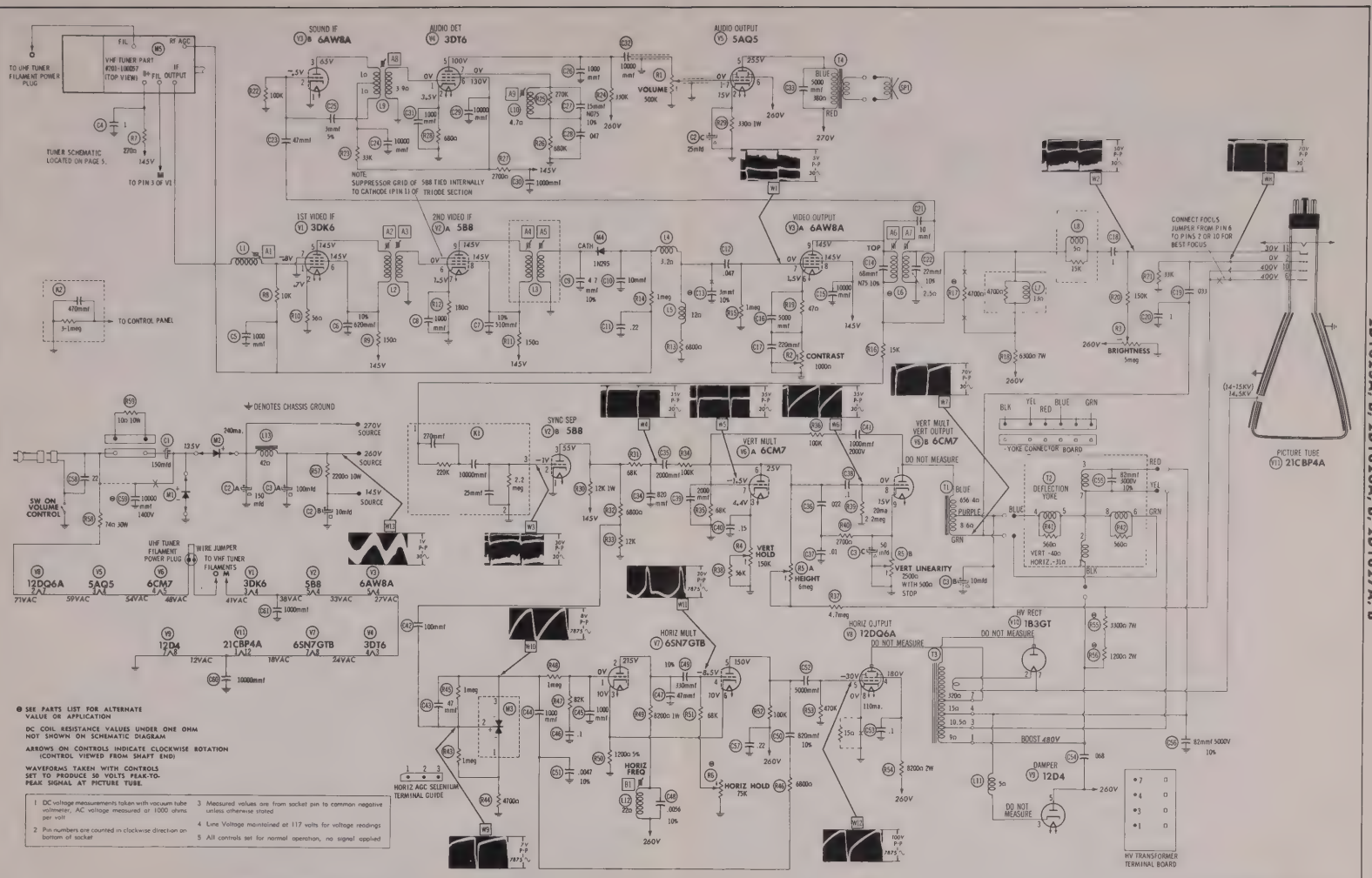


● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured or 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

3 Measured values are from socket pin to common negative unless otherwise stated

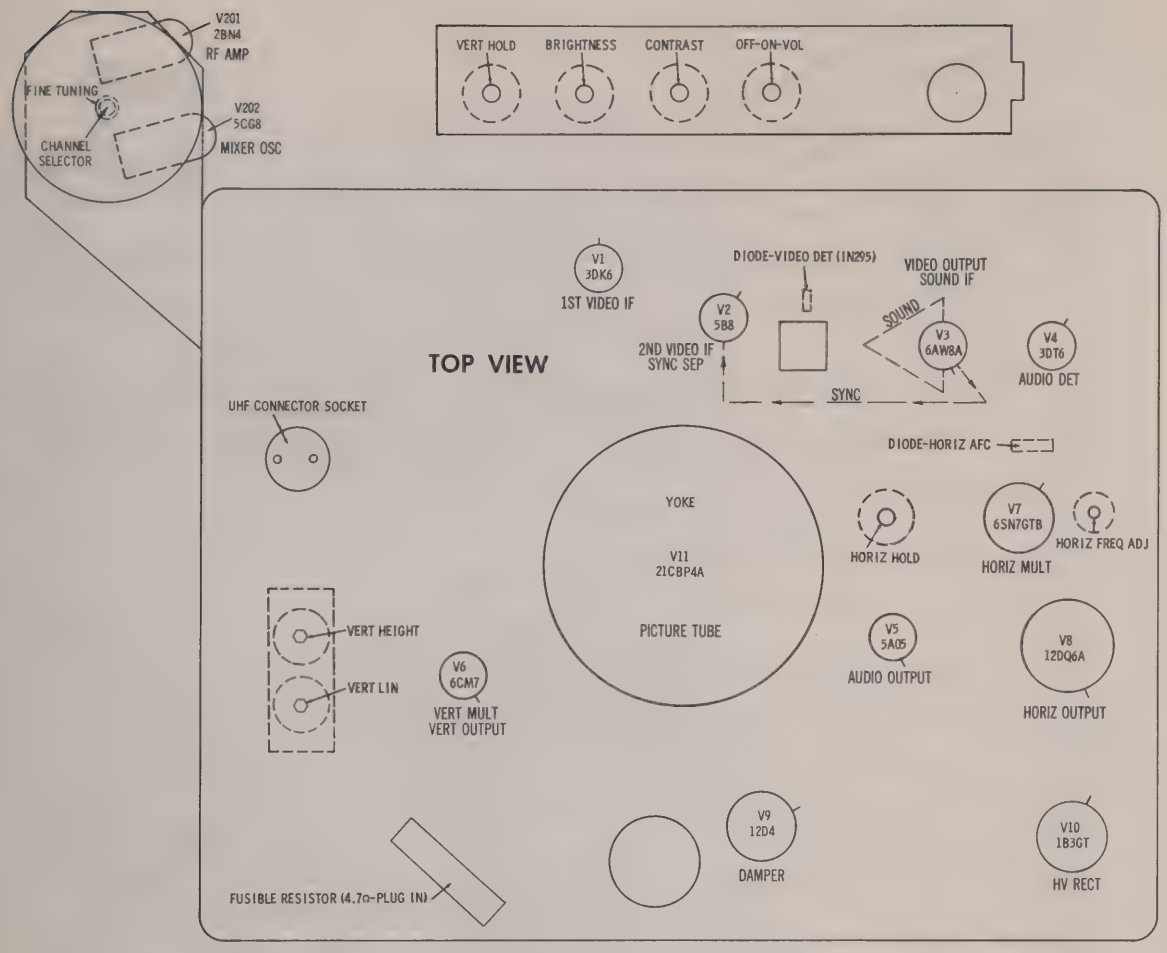
4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TRUETONE MODELS 2D1824A, B, 2D1825A, B, 2D1826A, B, 2D1827A, B

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

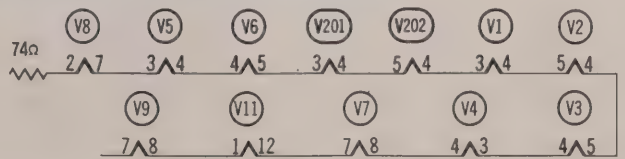
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R59), Rectifier (M1, M2)**

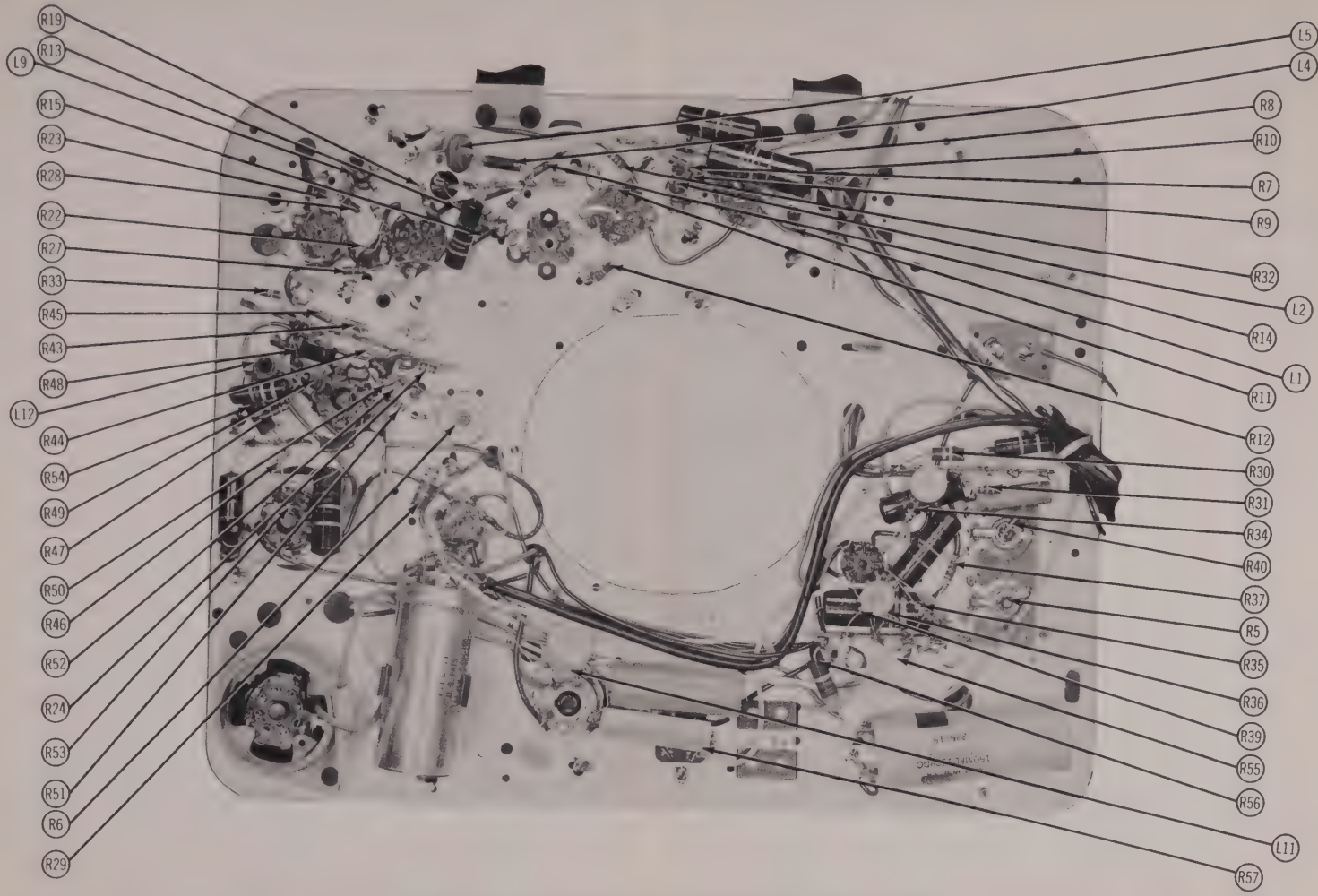
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, Diode (M4), V3**
No pic, no sound, has snow - **V201, V202**
No pic, has sound, has raster - **V3, V11**
Has pic, no sound - **V3, V4, V5**

SYNC FAILURE
No vert. sync - **V2**
No horiz. sync - **V2, Rectifier (M3)**
No vert. or horiz. sync - **V2**

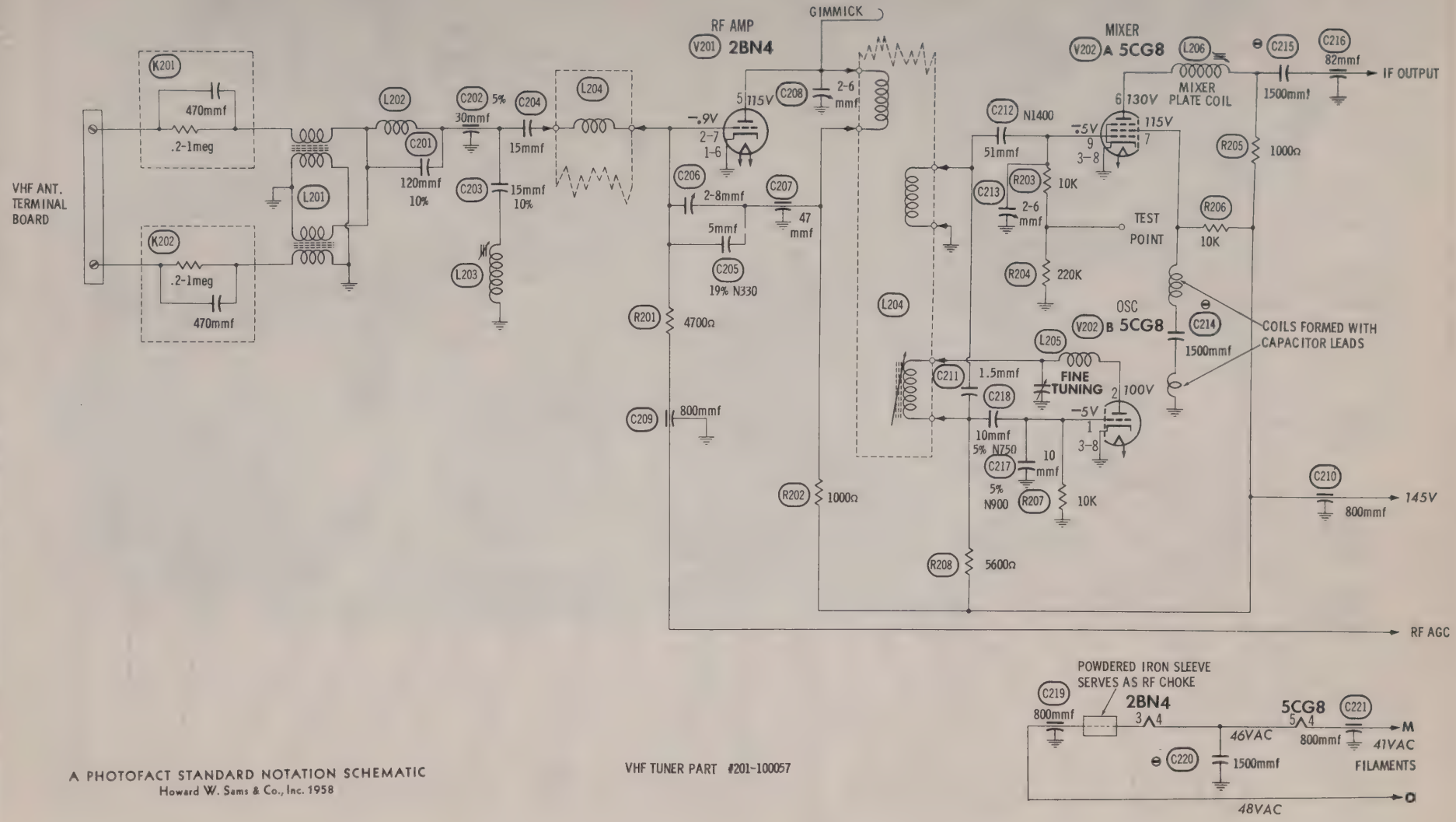
SWEEP FAILURE
No raster, has sound - **M3, V7, V8, V9, V10, V11**
No vertical deflection - **V6**
Poor vert. linearity or foldover - **V6**
Poor horiz. linearity or foldover - **V7, V8, V9**
Narrow picture - **V7, V8, V9, M1, M2**
Vert. off freq. - **V6**
Horiz. off freq. - **V7**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

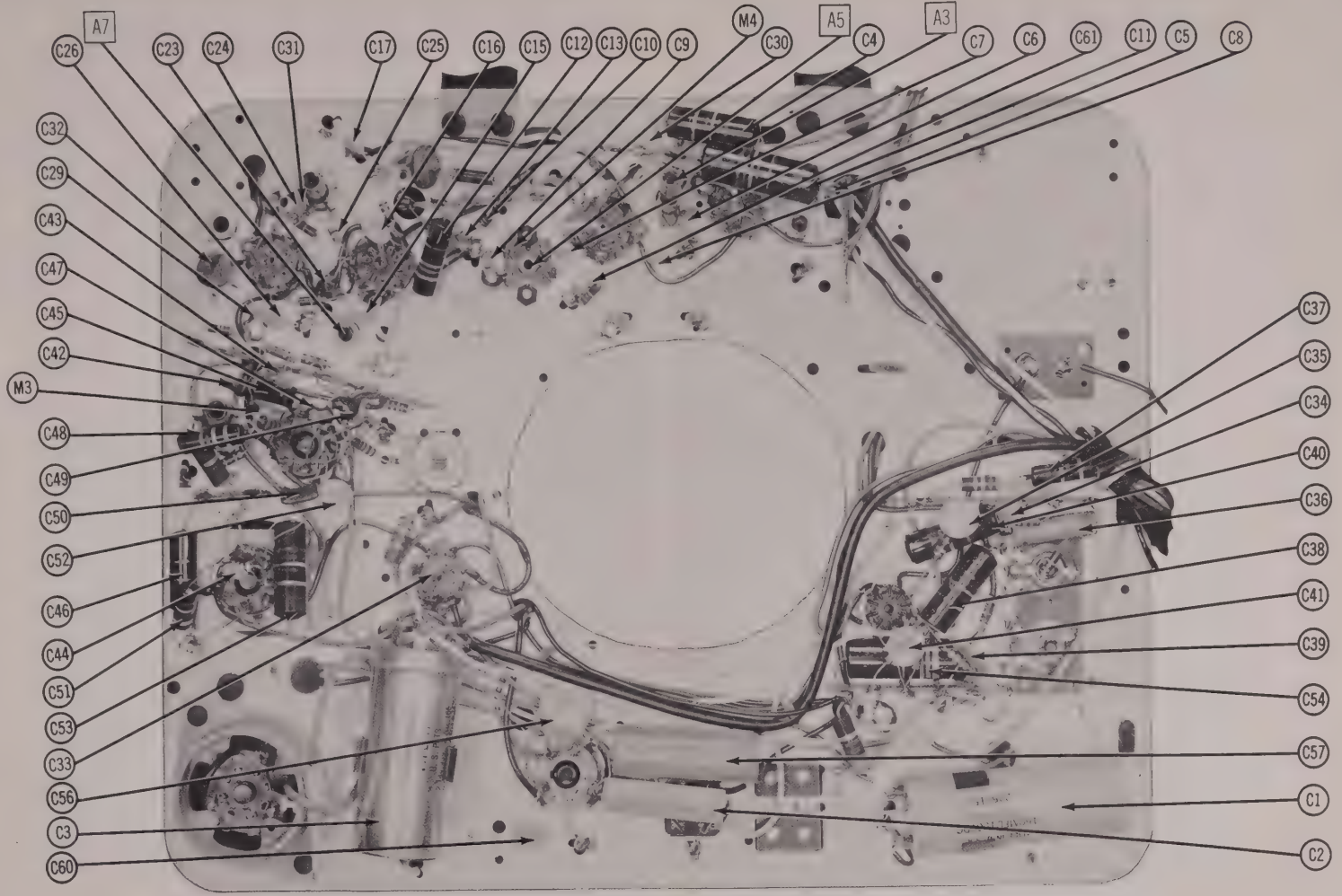


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER PART #201-100057

TUNER SCHEMATIC

TRUETONE MODELS 2D1824A, B, 2D1825A, B, 2D1826A, B, 2D1827A, B



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Disable the local oscillator by replacing the mixer-osc. tube (V202) with one having the oscillator grid pin removed.
Disconnect the antenna and short the antenna terminals.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	42.75MC 45.75MC	Any non-interfering channel	Vert. Amp. thru detector (Fig. 1) to pin 5 (plate) of 3DK6 (V1). Low side to chassis.	Mixer Plate Coil, A1	Adjust for response similar to Fig. 2 with markers in proper positions.
2.	1000mmf Ceramic Capacitor	High side to pin 1 (grid) of 3DK6 (V1). Low side to chassis.	"	"	"	Vert. Amp. thru detector (Fig. 1) to pin 9 (plate) of 5B8 (V2). Low side to chassis.	A2, A3	"
3.	"	"	"	"	"	Vert. Amp. to point (B) Low side to chassis. (Across video det. load).	A4, A5	"
4.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"		Retouch mixer plate coil and A1 thru A5 as necessary for response similar to Fig. 3. Remove bias and replace V202.

SOUND IF ALIGNMENT

Set the contrast control fully clockwise. Set the volume control at mid-range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	1000mmf Ceramic Capacitor	High side to point (B). Low side to chassis.	Not used	4.5MC (400~ 30% AM Mod)	Any non-interfering channel	Vert. Amp. thru detector (Fig. 4) to pin 11 (cathode) of picture tube.	A6, A7	Turn A6 fully counter clockwise and A7 fully clockwise. Turn A6 clockwise for MINIMUM 400~ indication on scope.
6.	"	"	4.5MC (15KC Swp)	Not used	"	Across secondary of audio output transformer.	A7, A8, A9	Use only enough sweep generator output to provide a usable pattern on scope. Turn A10 fully counter clockwise. Adjust A7, A8 and A9 for maximum indication on scope. Remove test equipment and tune in a TV signal. Retouch A9 for MINIMUM buzz.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 12.

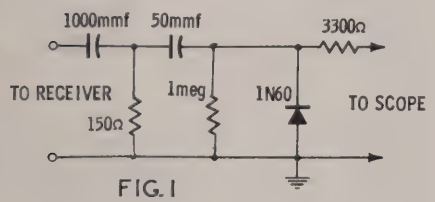


FIG. 1

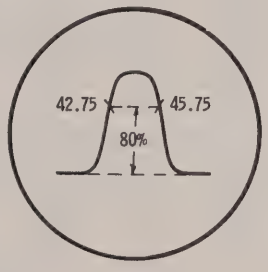


FIG. 2

FIG. 3

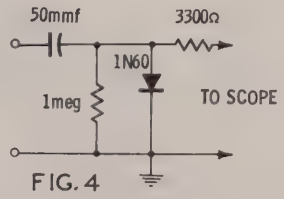


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3DK6	
V2	2nd Video IF Amp - Sync Sep	5D8	
V3	Video Output-Sound IF Amp	6AW8A	
V4	Audio Det	3DT6	
V5	Audio Output	5AQ5	
V6	Vert Mult - Vert Output	6CM7	
V7	Horiz Mult	6BN7GTB	
V8	Horiz Output	12DQ8A	
V9	Damper	1D4	
V10	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	TRUETONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V11	21CBP4A		21CBP4A ①	21CBP4 ① 21CBP4A ②	① "Silverama" ③ ② "Silver screen 65"

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA TRUETONE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	245-300006	AFIII-24	XA0191	FP117	TMS-25	PM-15150	TVL-1439
C2A	250	300	245-300005	AFIH-02-45	BB334 BBR25-25		TMD-50 TD-25-25	ET-538 MT-0235	*R2169
B	40	300							
C	25	25							
C3A	400	300	245-300004	AFIH-U3	BB736 BR505		TMD-85 TD-50-50	CD-410 MT-0550	*R2283
B	10	475							
C	50	50							

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	1	400	501-024104	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C5	1000		047-100320	BPD-001	DD-103	BYA5D4	ED-1000	DC531	5HK-DX	
C6	620		047-100033			1R5T62	CY15C62J			
C7	510		047-100021			1R5T51	CY15C51K			10%
C8	1000		047-100320	BPD-001	DD-103	BYA5D4	ED-1000	DC531	5HK-DX	10%
C9	4.7		047-200403-06	NPO-SI 4.7	TCZ-4R7	TCA5V47C	TCO-4.7	ZT-5547	5TCCB-V47	10%
C10	10		047-100160-11	RI 10		LT5Z	GP-10	UC-541	5GA-Q	
C11	22	200	501-014284	P288N-22		CUB2P22		GEM-3022	2TM-P22	
C12	047	200	501-014473	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C13	3		047-100057	NPO-SI 3.0	CD-30J	CC9Y3C	TCO-3	ZT-583		10% ①
C14	68		047-100835							N75 10%
C15	1000		047-100324	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C16	5000		047-100442	BPD-005	DD-502	BYA10D6	ED-005	DC525	5HK-D5	
C17	220		047-100031	DL-00022	DD-221	L20T22	ED-220	UC-5322	5GA-T22	
C18	1	400	501-014104	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C19	033	600	501-034333	P858N-033	DF-303	CUB6S33		GEM-6133	6TM-S33	
C20	1	600	501-034104	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C21	10		047-100160-11	RI 10	DE-100	LT5Q	GP-10	UC-541	5GA-Q	
C22	22		047-100834	NPO-DI 22	DD-220	L20Q22	ED-22		MH-422	10%
C23	47		478-037470	SI 47	DE-470	LT5Q47	GP-47	UC-5447	5GA-Q47	
C24	10000		047-100324	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C25	3		047-100607							5%
C26	1000		047-100320	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DX	
C27	15		047-300480							N075 10%
C28	047	200	501-014473	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C29	10000		047-100324	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C30	1000		047-100320	BPD-001	DD-103	BYA5D1	ED-1000	DC521	5HK-DX	
C31	1000		047-100320	BPD-001	DD-103	BYA5D4	ED-1000	DC521	5HK-DX	
C32	10000		047-100324	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C33	5000		047-100442	BPD-005	DD-502	BYA10D6	ED-005	DC525	5HK-D5	
C34	330		047-100606	SI 330	DE-331	BYA10T33	ED-330		5GA-T32	
C35	2000		047-100395	BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	
C36	032	400	499-032330	P488N-032	DD-303	CUB4S32	ED-03	GEM-4123	4TM-S32	
C37	01	400	501-014103	P488N-01	DE-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C38	1	400	501-034104	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C39	2000		047-100395	BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	
C40	15	200	501-014154	P288N-15		CUB2P15		GEM-2015	2TM-P15	
C41	1000	2000	347-100358	BYD-30-1000	DD30-302	BYD30D1	HDS-1000	DC931	30HKD-01	
C42	100		478-037101	SI 100	DE-101	LT5T1	GP-100	UC-531	5GA-T1	
C43	47		478-037470	SI 47	DE-470	LT5Q47	GP-47	UC-5447	5GA-Q47	
C44	1000		047-100320	BPD-001	DD-103	BYA5D1	ED-1000	DC521	5HK-DX	
C45	1000		047-100320	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DX	
C46	1	400	501-014104	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C47	47		347-300013	1488-000047	DS-470	SW5Q47	ED-47	UC-5447	1FM-647	
C48	.0056	400	499-025563					GEM-16356		10%
C49	330		347-100010	1489-00033	DS-331	SR5T33	ED-330		MH-333	10%
C50	820		347-300011	1489-00083		1R5T82	ED-820		MH-382	10%
C51	0047	200	501-014173					GEM-16347		10%
C52	5000		047-100442	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C53	1	400	501-034104	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C54	068	600	501-034683	P688N-068		CUB6S68		GEM-6168	6TM-S68	
C55	82	3000								10%
C56	82	5000	347-100008							10%
C57	22	600	501-034334	P688N-22		CUB6P22		GEM-6022	6TM-P22	
C58	22	600	499-034234	P688N-22		CUB6P22		GEM-6022	6TM-P22	
C59	10000	1400		DAC-27	DD48-103	HVE181		GEM-181	BL-810	②
C60	10000		047-100324	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C61	1000		047-100320	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DX	

① Not used in some versions.
② Some versions use .032mfd in this application.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	225-300012	B-60-8	A47-500K-2	Q13-133	TA55A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWS-12	TS-1	US-28	
R2A	1000Ω	½	225-300014	B-3	A47-1000-8	Q11-108	TA31L	Contrast
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	5meg	½	225-300013	B-87	A47-5meg-8	Q11-141	TA45L	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	150K	½	225-300015	B-43	A47-150K-8	Q11-125	TA34L	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	6meg	½	225-300010					Height
B	250Ω	½						Vert. Lin. with 500Ω stop
R6A	75K	½	25B1305	B-35	A47-75K-8	B11-128	PTA15L	Horiz. Hold - Note 1
B	Shaft			Not Req.	FKS-1/2	TM3-EH	Not Req.	

Note 1. Alternate part #025-301305 may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING OHMS	RATING WATT	TRUETONE PART No.	NOTES
R7	270Ω		451-252271	
R8	10K		451-252103	
R9	150Ω		451-252151	
R10	56Ω		451-252560	
R11	150Ω		451-252151	
R12	180Ω		451-252181	
R13	6800Ω		451-252683	
R14	1meg		451-253106	
R15	1meg		451-253106	
R16	15K		451-252153	
R17	4700Ω	7	451-252472	Note 1
R18	83000Ω	7	234-100008	
R19	47Ω		451-252470	
R20	150K		451-252154	
R21	33K		451-252333	
R22	100K		451-252104	
R23	33K		451-252333	
R24	330K		451-252334	
R25	270K		451-252274	
R26	680K		451-252684	
R27	270K		451-252274	
R28	680Ω		451-252681	Note 2
R29	3300Ω	1	451-252331	Note 2
R30	12K	1	451-252123	
R31	68K		451-252683	
R32	6800Ω		451-252683	
R33	12K		451-252123	
R34	100K		451-252104	
R35	68K		451-252683	
R36	100K		451-252104	
R37	4.7meg		451-253473	
R38	56K		451-252563	
R39	2.5meg		451-253255	
R40	2700Ω		451-252273	
R41	560Ω			
R42	560Ω			
R43	1meg		451-253105	
R44	4700Ω		451-252472	
R45	1meg		451-253106	
R46	68000Ω		451-252683	
R47	82K		451-252823	
R48	1meg		451-253105	
R49	83000Ω	1	451-252322	
R50	13000Ω 8%		451-251122	
R51	68K		451-252683	
R52	100K		451-252104	
R53	470K		451-252474	
R54	33000Ω	2	451-252332	
R55	33000Ω	7		
R56	1300Ω	2	451-252132	Note 2
R57	2300Ω	10	453-001232	
R58	74Ω	20	234-100003	
R59	10Ω	10	234-300002	

Note 1. Not used in some versions.
Note 2. Some versions may use a single 4700Ω 7W (Part #234-100008) to replace R55 and R56 in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA TRUETONE PART No.	Hallodson PART No	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert Output	255-300007	Z1803 ①	A-3036 ①	V307 ②	VO-100 ②	26S73 ②	A-31JX ①	
T2A	Yoke-Horiz. (20MH)	253-300003	DF607	MDF-92	Y90F19/43	DY-16A	Y-16	Y-41 &	
B	(90°) Vert (35MH)		③ ⑤	② ⑤	② ⑤	② ⑤	② ⑤	WW4 ②	
M6	Rear Cover & Centering Device	22-300003							
	Yoke Clamp	276-20024							
T3	Horiz Output	255-400008			X151 ② ⑤	HO-263 ⑤		D-110 ⑤	

① Connect as autoformer.
② Drill new mounting hole(s).
③ Connect same as original. Use original rear cover and centering device.
⑤ Use original horizontal yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Hallodson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
7			9	8		8
4			8 & 5	3		6
3			4	2		5
1			2	1		4
Special Note: →			③			

③ If excessive width, remove capacitor (C56) from circuit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRUETONE PART No.	Hallodson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	4800Ω	3-4Ω	255-300005	ZU107 ①	A-3026	AU-501 ①	A-3338	34B46	S-8X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP	REPLACEMENT DATA TRUETONE PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	285-300005	6A15	

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ist. Video IF	051-202167	17-4534	TV-131	4303	VF-4	
L2	2nd. Video IF	251-100006					
L3	3rd. Video IF	050-200868					17 Microhenries
L4	RF Choke	053-100042					659 Microhenries
L5	Shunt Peaking Coil	251-100003	19-3860	TV-305	6146		Note 1
L6A	4.5MC Trap	251-100008		TV-130			
B	Ist. Sound IF						705 Microhenries,
L7	Shunt Peaking Coil	251-100004		TV-305 *	6146 *		wound on 4700Ω resistor
				TV-306 ▲	6149 ▲		156 Microhenries,
L8	Series Peaking Coil	251-100005	19-3160 ▲	TV-196 ▲	6130 ▲	VP-5 ▲	wound on 15K resistor
L9	2nd. Sound IF	051-202166					
L10	Quadrature Coil	051-201857	20-1605	TV-121	3480		7.5 Microhenries,
L11	RF Choke	053-100307					IRC part #CLA

Note 1. Alternate part #251-300006 may be used in some versions.
* Paralled with 470Ω resistor.
▲ Paralled with 15K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI	DC RES SEC	REPLACEMENT DATA TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L12	22Ω		051-202159	19-1570	TV-163 *	6210 *	H-102 *	RS-4	* Enlarge mounting hole.

FILTER CHOKE

ITEM No	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT (1000 Cy.)	REPLACEMENT DATA TRUETONE PART No	Hallodson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
L13	210A	42Ω	1 @ 3 Hy.	256-200008	C5037 ①	C-3974		C-2327 ①	26C43	C-23X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Sync Coupling	270mmf, 10000mmf, 25mmf, 230K, 3.3meg	049-100048	Aerovox CD-533 Centralab PC-383 Sprague ST-3
K2	Chassis Isolation	470mmf, .3-1meg	049-100072	Centralab RC-471 Sprague R-2177

RECTIFIERS

ITEM No	RATING CURRENT (Measured)	REPLACEMENT DATA TRUETONE PART No	FEDERAL PART No	INTERNATIONAL PART No	GENERAL ELECTRIC PART No	SARKES TARZIAN PART No.	NOTES
M1	240A	227-200001 ①	1090A ②	1N1007 ②		SD64A ①	M500 ① ① Silicon type.
						RS3006L ②	300 ② ② Selenium type.
M2	240A	227-200001 ①	1090A ②	1N1007 ③		SD64A ①	M500 ① ③ Germanium type
						RS3006L ②	300 ② ④ Two required
M3		027-300226 ③ ④	1215 ② ④			1T1 ② ④	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA TRUETONE PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M4	1N295	019-301980	1N80	1N295	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M5	Tuner	201-100057	VHF
	Tuner Assy.	259-900001	UHF Adapter (3DH120) Includes UHF tuner #201-300092, adapter cover for VHF tuner #201-100057 and mounting parts
M6	Centering Device	221-300003	Includes yoke cover

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

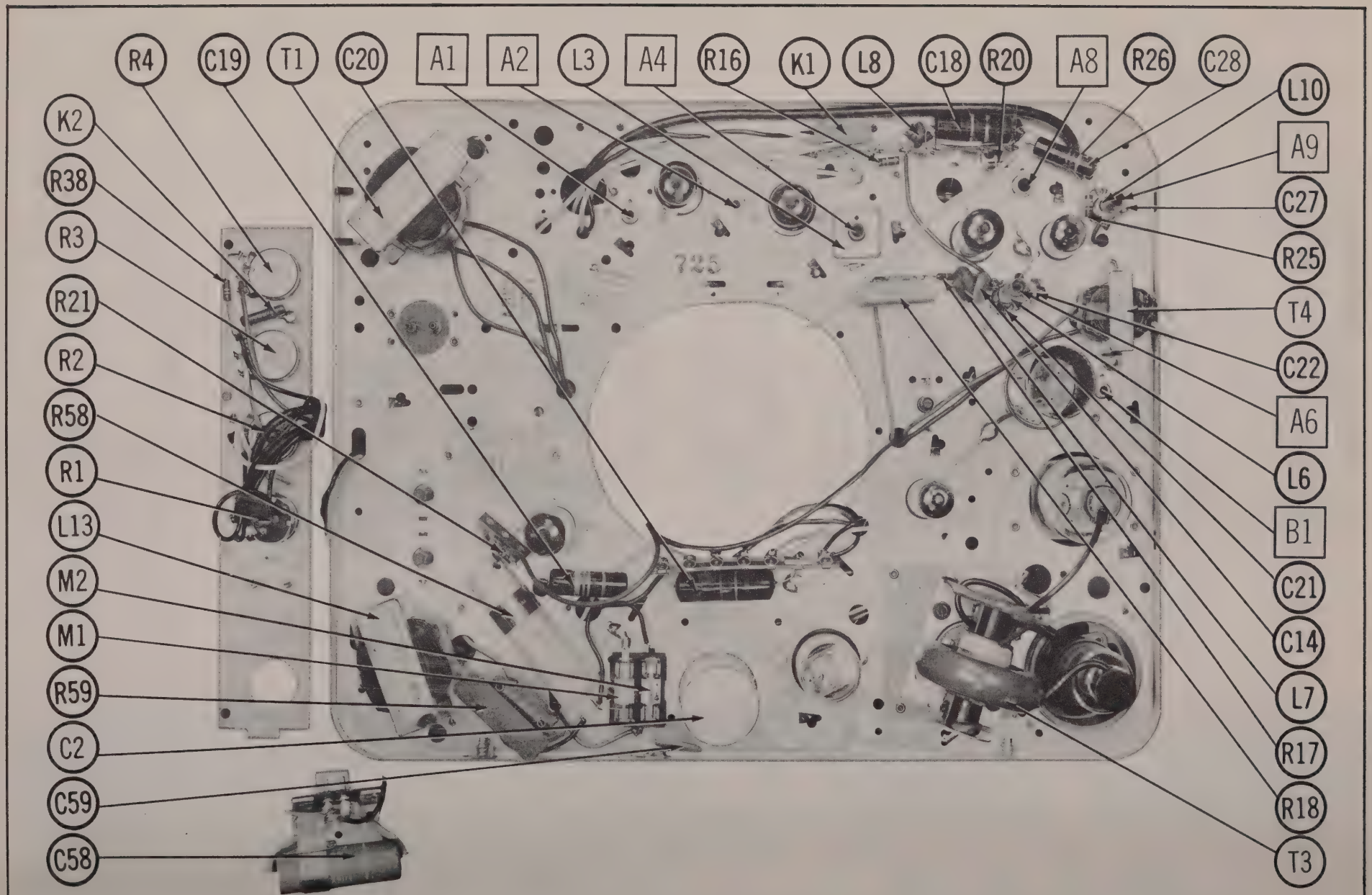
NAME	PART NO.	DESCRIPTION
Safety Glass	222-100005	
Mask	207-100015	
Knob	215-300056	Channel Selector
Knob	215-300057	Fine Tuning
Knob	215-300052	Volume, On-off
Knob	215-300053	Contrast
Knob	215-300054	Brightness
Knob	215-300055	Vert. Hold
Knob	215-300051	UHF Indicator
Knob	215-300050	UHF Tuning
Cabinet	278-700008	Models 21K824A, 21K825A
Cabinet	278-700007	Models 21K825A, 21K827A
Cabinet	278-700025	Models 21K824B, 21K825B
Cabinet	278-700026	Models 21K826B, 21K827B
Leg	278-300009	Models 21K824A, B, 21K825A, B
Leg	278-300010	Models 21K826A, B, 21K827A, B

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8220 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8485 (Round) - 8 Conductor

TRUETONE MODELS 2D1824A, B, 2D1825A, B, 2D1826A, B 2D1827A, B

FOLDER 3



CHASSIS TOP VIEW

TUNER PARTS LIST & DESCRIPTION

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		121-001521	NPO-DI 120	DD-121	L10T12	ED-120		5TCC-T12	10%
C202	30		121-001522							5%
C203	15		121-001523	NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C204	15		121-001524	BPD-000015	DD-150	L10Q15	ED-15		5GA-Q15	
C205	5		121-001526							10% N330
C206	2-8		121-001536							
C207	47		121-001537							
C208	2-6		121-001527							
C209	800		121-001525							
C210	800		121-001525							
C211	1.5		121-001529	NPO-SI 1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C212	51		121-001528							N1400
C213	2-6		121-001527							
C214	1500			BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	①
C215	1500			BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	①
C216	82		121-001534							
C217	10		121-001530							N900 5%
C218	10		121-001532		TCN-10		TC7-10			N750 5%
C219	800		121-001525							
C220	1500			BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	①
C221	800		121-001525							

① Some versions may use 1000mmf (part #121-001533) in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R201	4700Ω		451-253472	
R202	1000Ω		451-253102	
R203	10K		451-253103	
R204	220K		451-253224	

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R205	1000Ω		451-253102	
R206	10K		451-253103	
R207	10K		451-253103	
R208	5600Ω		451-252562	

COILS (RF-IF)

ITEM No.	USE	TRUETONE PART No.	NOTES
L201	Ant. Trans.	121-001544	
L202	IF Trap	121-001538	
L203	IF Trap	121-001539	
L204	Coil Assy.	121-001540	Includes rotor

ITEM No.	USE	TRUETONE PART No.	NOTES
L205	Osc. Plate Coil	121-001541	
L206	Mixer Plate Coil	121-001542	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg	121-001556	Centralab	RC-471
K202	Antenna Isolation	470mmf, .2-1meg	121-001556	Centralab	RC-471

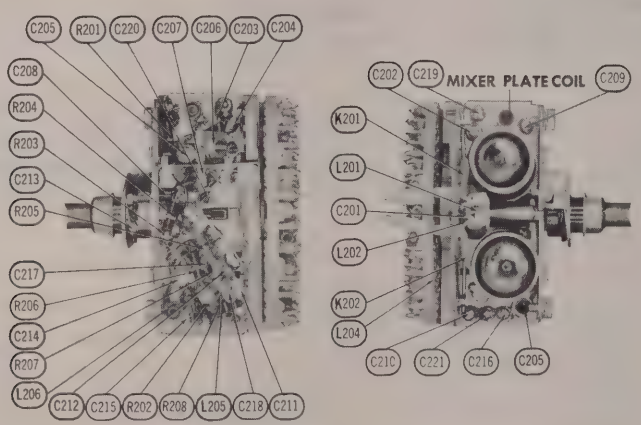
TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

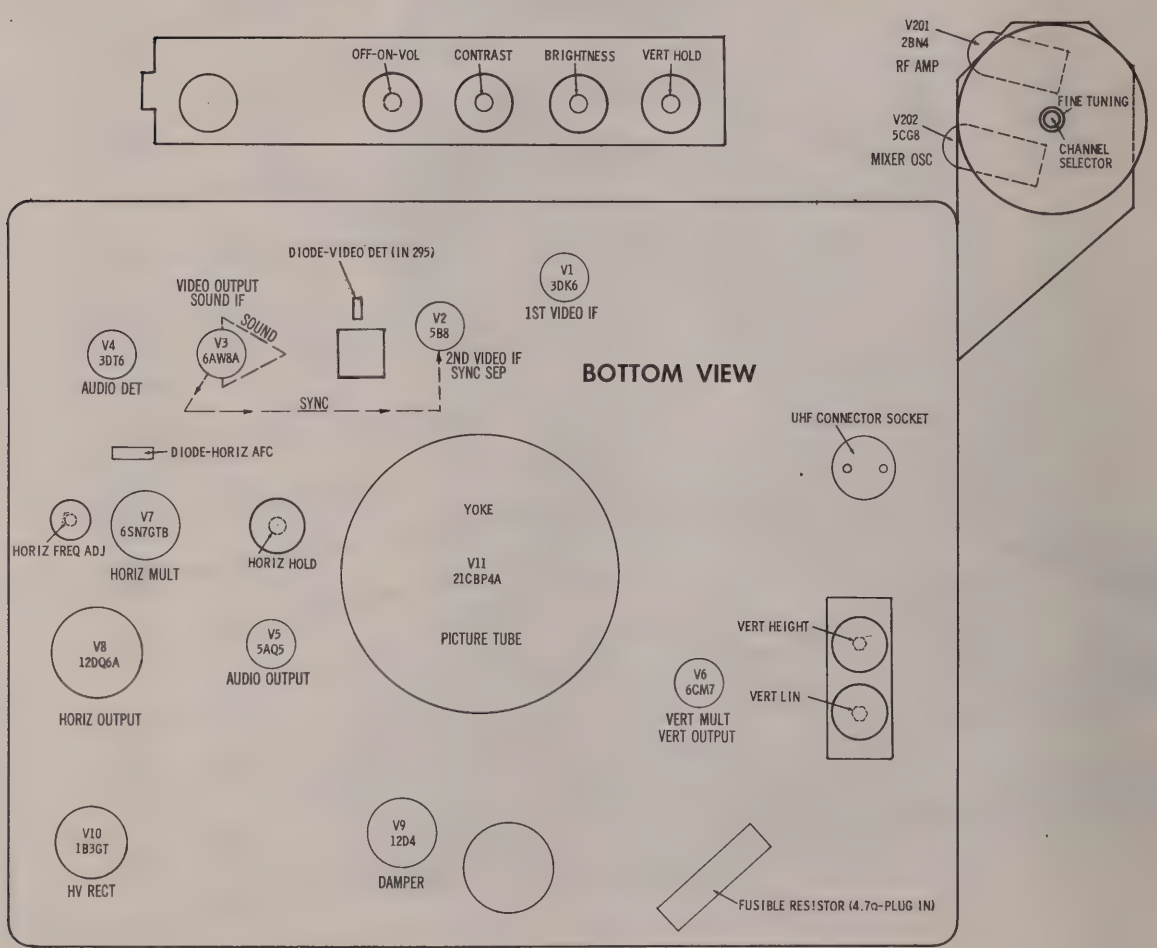


RF TUNER

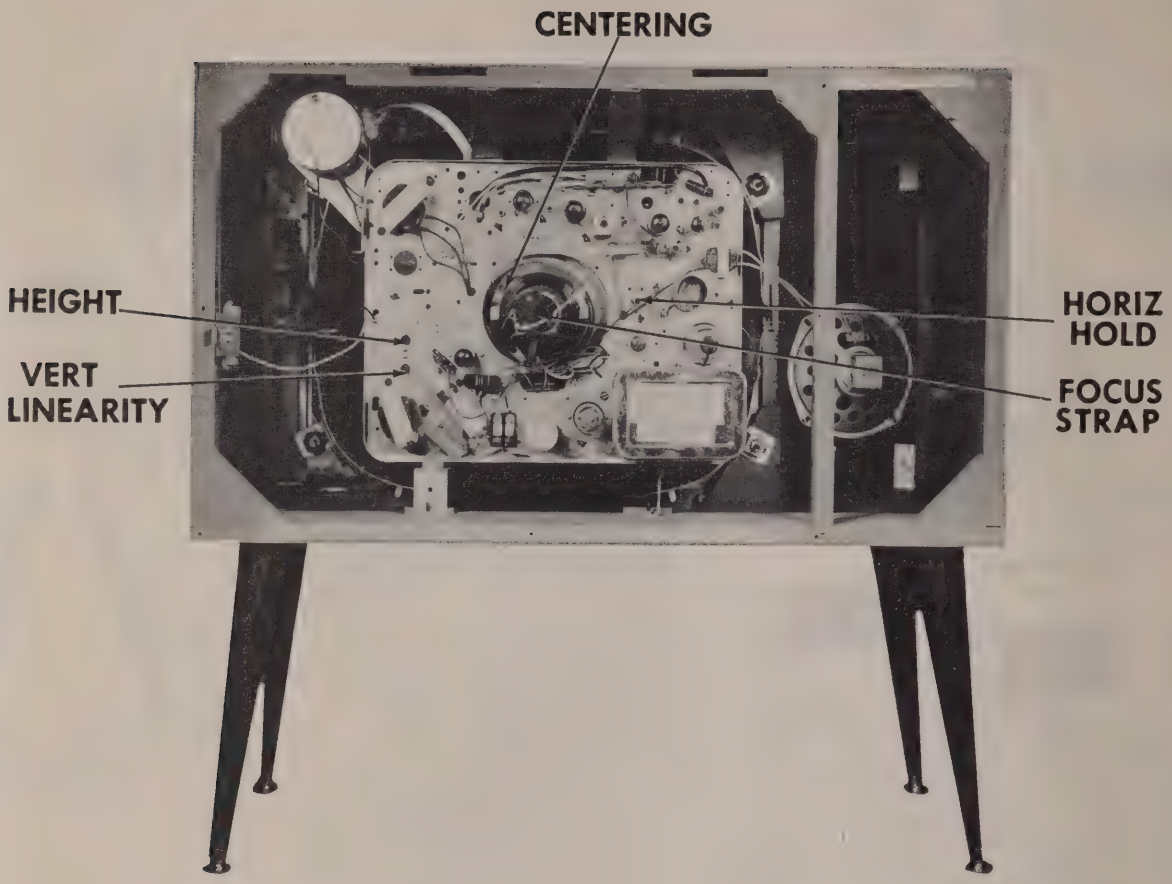
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3DK6	1meg	56Ω	10Ω	9.5Ω	†2300Ω	†2300Ω	0Ω		
V2	5B8	0Ω	2.2meg	†14K	8Ω	9.5Ω	.1Ω	180Ω	†2300Ω	†2300Ω
V3	6AW8A	0Ω	100K	†37K	6.5Ω	8Ω	130Ω	1meg	†2200Ω	†6300Ω
V4	3DT6	3.9Ω	680Ω	6.5Ω	6Ω	†330K	†4900Ω	680K		
V5	5AQ5	0Ω	330Ω	14Ω	13Ω	†380Ω	†42Ω	0Ω		
V6	6CM7	‡5100Ω	NC	•90K	13Ω	11.5Ω	‡ 8meg	68K	2.2meg	•1600Ω
V7	6SN7GTB	2.3meg	†8200Ω	1200Ω	•100K	†100K	1200Ω	4.5Ω	6Ω	
V8	12DQ6A	0Ω	17Ω	TP	†8200Ω	470K	TP	14Ω	0Ω	TOP CAP ‡ 20Ω
V9	12D4	NC	TP	¶	NC	†42Ω	NC	0Ω	3Ω	
V10	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡ 340Ω
V11	21CBP4A	3Ω	33K	PIN 6 ‡ 5000Ω	PIN 10 ‡ 5000Ω	11 PIN •320K	12 PIN 4.5Ω			
V201	2BN4	0Ω	1meg	11.5Ω	11Ω	†3400Ω	0Ω	1meg		
V202	5CG8	10K	†7800Ω	0Ω	10Ω	11Ω	†3200Ω	†12K	0Ω	230K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270 V. SOURCE
‡ MEASURED FROM PIN 3 OF V9
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Check the lock-in on other stations and if necessary, retouch B1 for best sync action on all channels.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the front.

2. Remove 8 metal screws holding the rear oover. Remove the rear cover.

3. Remove the speaker leads, tuner output plug and tuner power plug.

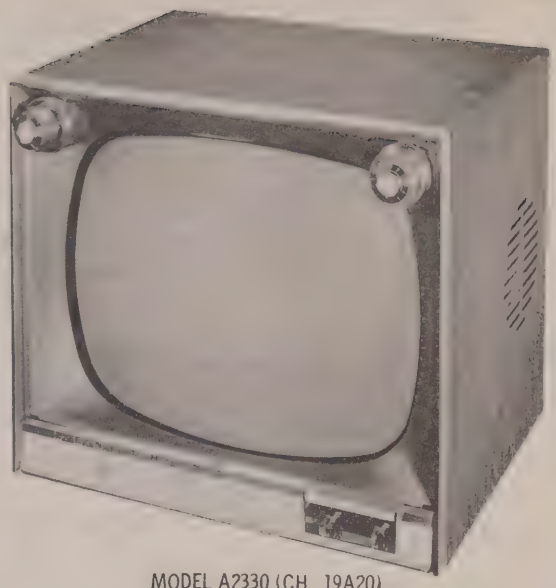
4. Remove 8 hex nuts holding the 2 speakers and remove the speakers.

5. Remove 2 metal screws holding the on-off-volume control bracket to the front of the cabinet.

6. Remove 2 metal screws holding the rear tuner brace to the cabinet. Lower the back of the tuner and pull back to remove.

7. Remove 4 chassis bolts from the bottom.

8. Remove chassis.



MODEL A2330 (CH. 19A20)

TRADE NAME	Zenith	MODELS	CHASSIS
		A2329J, A2330E, H, R, A2358E, R, A2359E, H, R, A2362M, R	19A20
		A2329JU, A2330EU, HU, RU, A2358EU, RU, A2359EU, HU, RU, A2362MU, RU	19A20U
		A3010E, H, R, A3011, E, Y, A3012H, R, A3013H, A3014H, R, A4007E, R	19A20Q

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 215 Watts, 2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the rear cover. Supply power to the receiver. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated, through a hole in the rear of the tuner. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 push-on type knobs at the top of the safety glass. Remove 4 metal screws holding the 2 knob escutcheons. Tilt glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied by means of a focus control. (For location, see tube placement chart).

C. Fringe Lock
Turn the fringe lock control fully clockwise, then counter clockwise approximately 1/4 turn. Adjust picture to lock-in with hold controls. If picture jitters, tears, etc., adjust fringe lock counter clockwise until stable. Readjust hold controls and check operation on all channels in the area.

D. Width
The width may be varied by means of a metallic sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture SLIGHTLY larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

PINCUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the 2 magnets so that all sides are straight.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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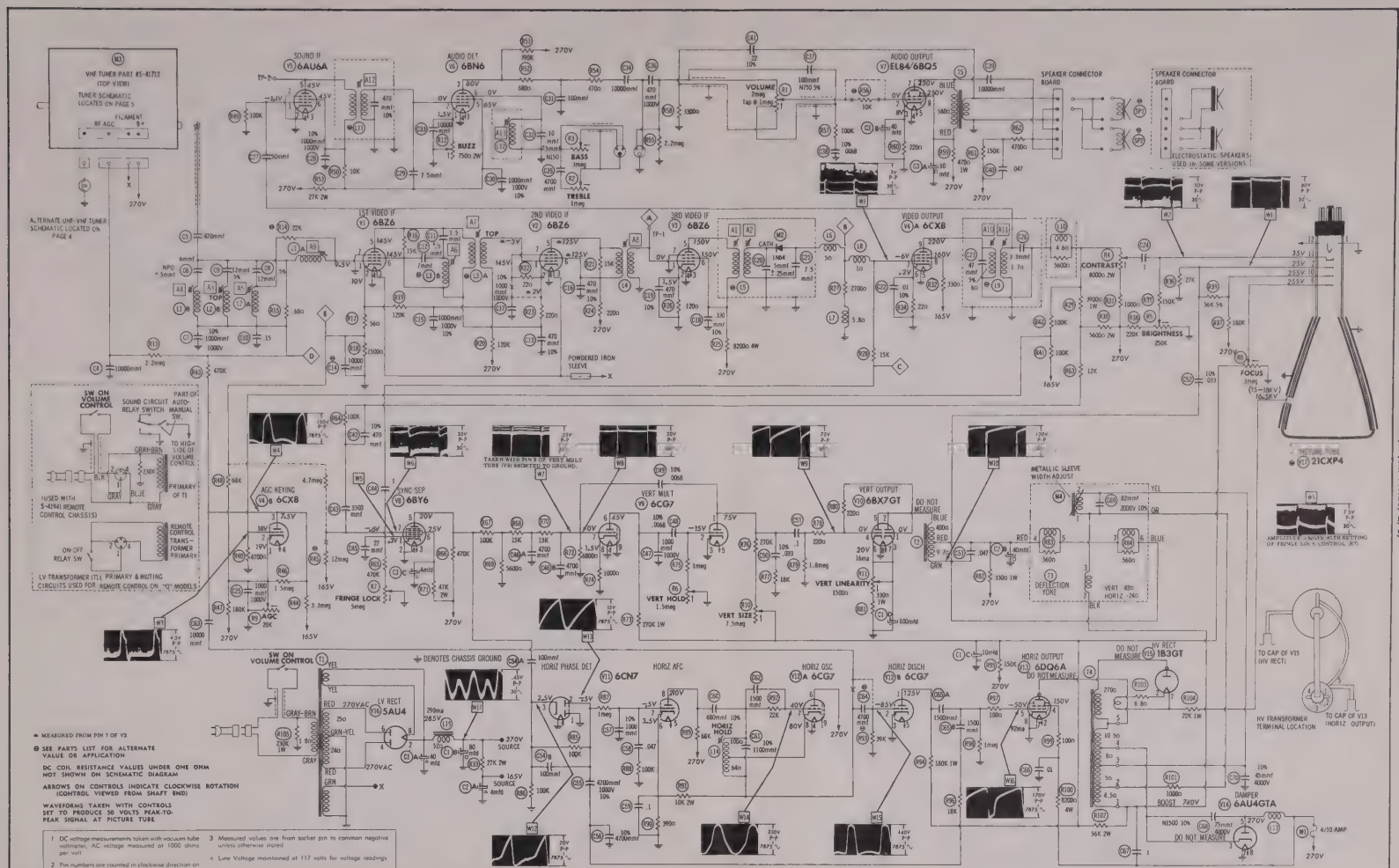
H415

ZENITH MODELS A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A3010E, H, R, A3011E, Y, A3012H, R, A3013H, A3014H, R, A4007E, R (Ch. 19A20, Q, U)

SET 394 FOLDER 4

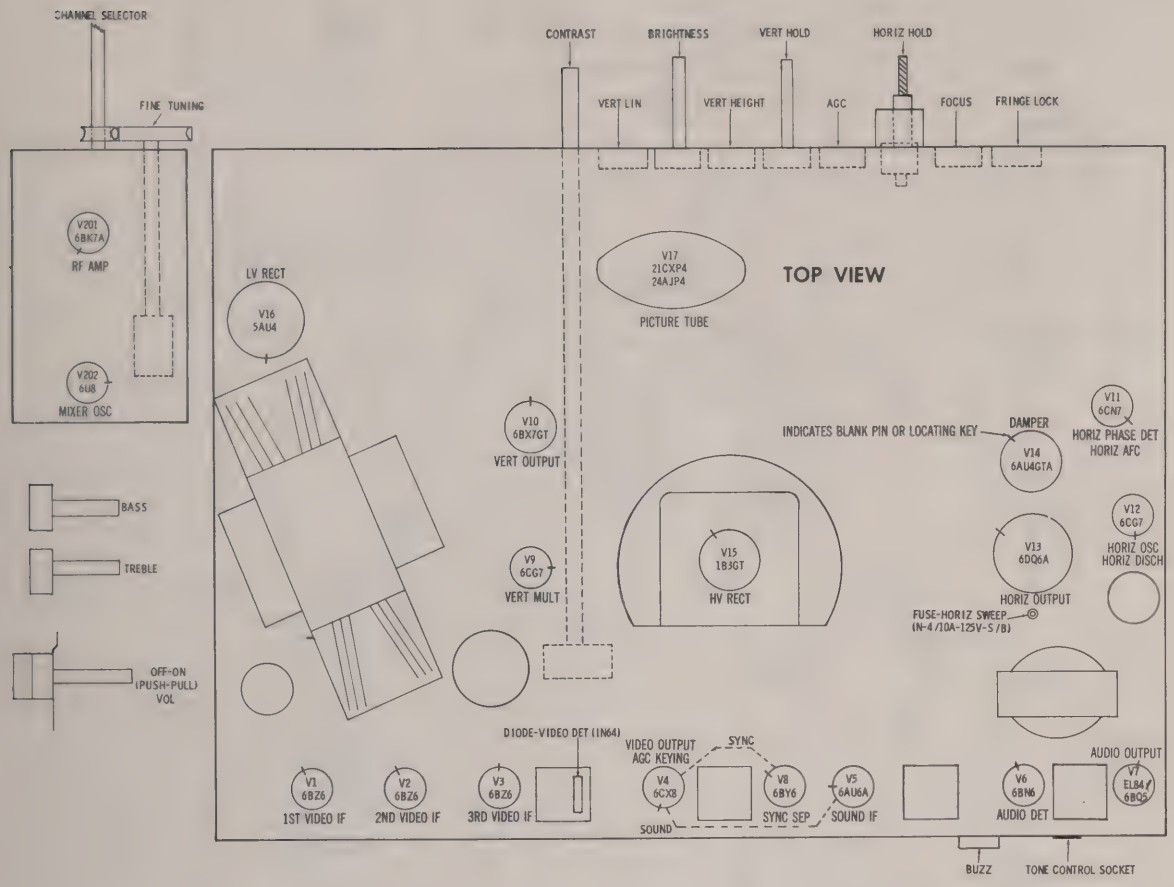


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ZENITH MODELS A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A3010E, H, R, A3011E, Y, A3012H, R, A3013H, A3014H, R, A4007E, R (Ch. 19A30, Q, U)

FOLDER 4

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

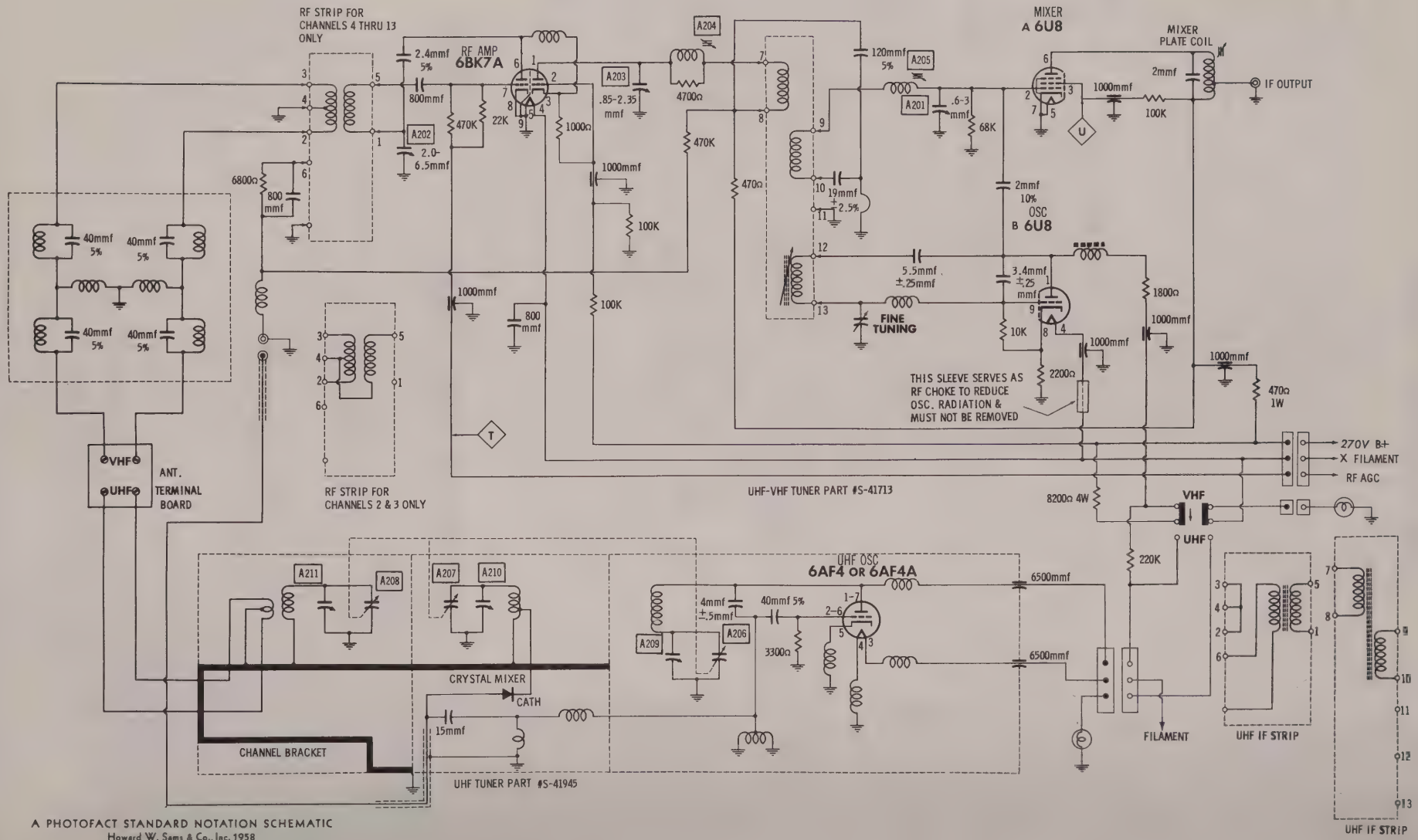
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V16**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, V3, Diode (M2), V4**
No pic, no sound, has snow - **V201, V202, V1**
No pic, has sound, has raster - **V4, V17**
Has pic, no sound - **V5, V6, V7**
Overloaded picture - **V4**

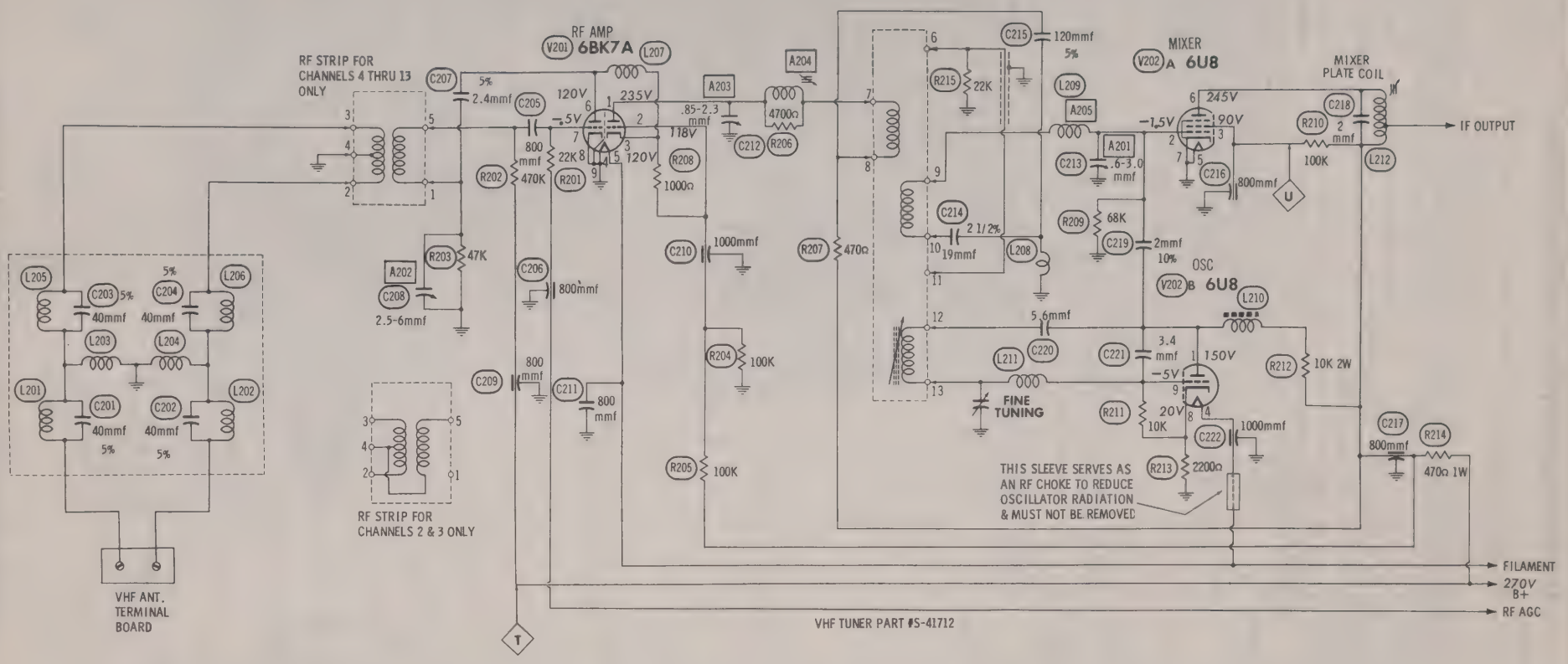
SYNC FAILURE
No vert. sync - **V8**
No horiz. sync - **V8, V11**
No vert. or horiz. sync - **V8**

SWEEP FAILURE
No raster, has sound - **Fuse (M1), V11, V12, V13, V14, V15, V17**
No vertical deflection - **V9, V10**
Poor vert. linearity or foldover - **V9, V10**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, V16**
Vert. off freq. - **V9**
Horiz. off freq. - **V12**



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ALTERNATE UHF-VHF TUNER SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUNER SCHEMATIC

ZENITH MODELS A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A3010E, H, R, A3011E, Y, A3012H, R, A3013H, A3014H, R, A4007E, R (Ch. 19A20, Q, U)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated,thru a hole in the rear of the tuner. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volts bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	50-300Ω Matching Trans.	Across antenna terminals thru matching transformer	69MC	67.25MC 71.75MC	4	Vert. Amp. thru 10K to point Ⓥ. Low side to chassis.	A201, A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	201MC	199.25MC 203.75MC	11	"	A204, A205	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. Repeat steps 1 and 2 until best overall symmetry is obtained.

UHF TUNER ALIGNMENT

Alignment of the UHF tuner should not be attempted without the proper test equipment.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning to center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Fig. 202	Across UHF antenna terminals thru matching network.	713MC	711.25MC	54	Vert. Amp. thru 10K across video detector load.	A206, A207, A208	With the UHF tuning knob set to channel 54, the rocker arm on the tuner should be in the horizontal position. If necessary, loosen set screw and turn the shaft independently of the pulley until the arm is in the horizontal position with the channel indicator on channel 54. Tighten the set screw. If the calibration is off more than 3 channels, adjust A206 to place video marker at 50% on curve as in Fig. 203. The image (weaker response) will appear also. The response toward counter clockwise position of A206 is the proper response. Adjust A207 and A208 for maximum amplitude of response similar to Fig. 203.
4.	"	"	473MC	471.25MC	14	"		Check for response similar to Fig. 203. If the oscillator is off more than 3 channels, adjust oscillator travel adjustment (osc., mixer and antenna travel adjustments are the three hex nuts on top of the UHF tuner next to the tuner chassis) to scale. Care must be used when making the adjustments so as not move the rocker arm out of its bearing. Set the mixer and antenna travel adjustments for maximum response on scope.
5.	"	"	887MC	885.25MC	83	"	A209, A210, A211	Adjust A209 to place marker at 50% on curve similar to Fig. 203. Adjust A210 and A211 for maximum amplitude and symmetry.

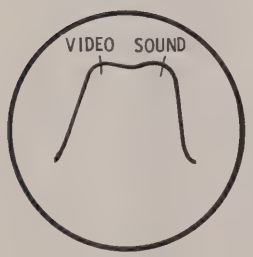


FIG. 201

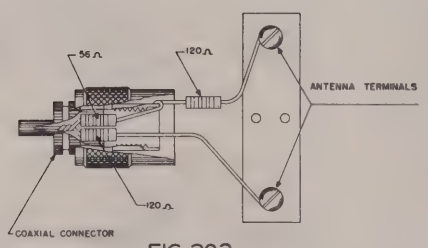


FIG. 202

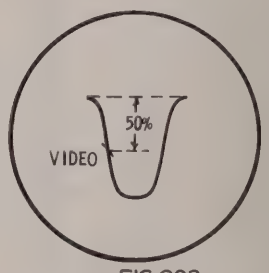
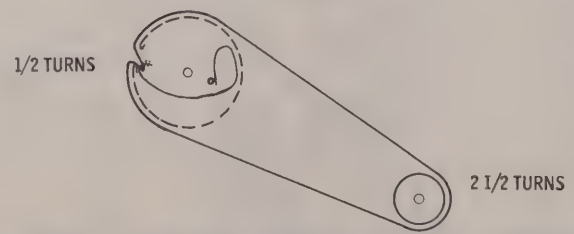
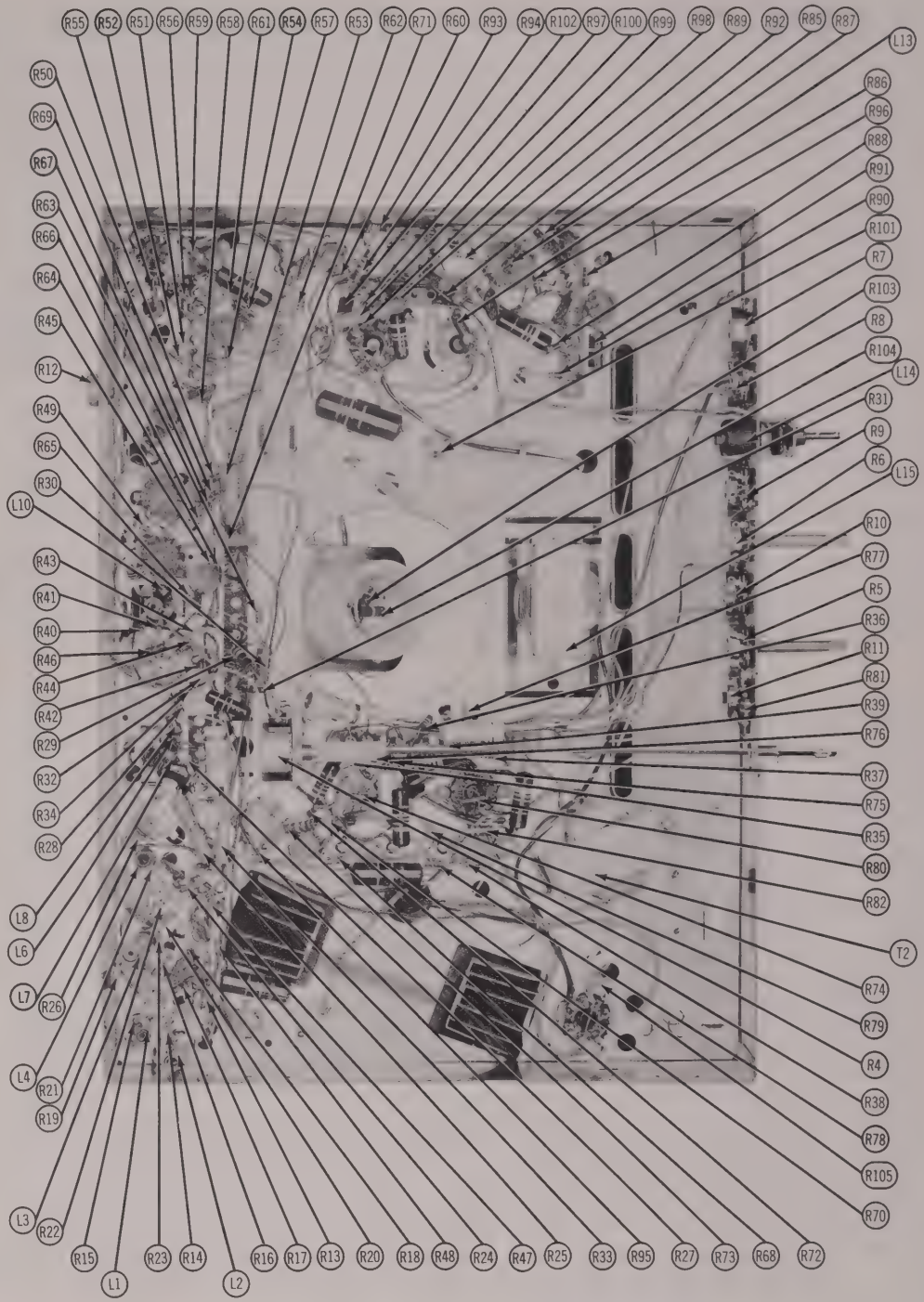


FIG. 203



FINE TUNING DRIVE CORD STRINGING



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ZENITH MODELS A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2363M, MU, R, RU, A3010E, H, R, A3011E, Y, A3013H, R, A3013H, A3014H, R, A4007E, R (CH. 19A30, Q, U)

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ZENITH MODELS A3329J, JU, A3330E, EU, H, HU, R, RU, A3358E, EU, R, RU, A3359E, EU, H, HU, R, RU, A3362M, MU, R, RU, A3010E, H, R, A3011E, Y, A3012H, R, A3013H, A3014H, R, A4607E, R (Ch. 19A20, Q, U)

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470mmf	High side to point Ⓐ. Low side to chassis.	44MC (10MC Swp)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across video det. load)	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained check to see that the cores are entering their respective windings from opposite ends of coils.
2.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	39.75MC 41.25MC 47.75MC	"	"	A3, A4, A5, A6	Connect a clip lead from point Ⓒ to chassis. Connect a clip lead from point Ⓓ to point Ⓔ. Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig. 2. A3 controls the 39.75MC marker, A4 controls the 41.25MC marker and A5 and A6 controls the 47.25MC marker.
3.	"	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Disconnect the clip lead from point Ⓔ and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects the low frequency side of the curve and A8 affects the high frequency side.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and receiver terminals. Tune in a modulated TV signal and adjust the attenuator until the signal is below the limiting level of the 6BN6 (V6) as evidenced by a hiss similar to super regeneration in the sound. Adjust A10, A11, A12 and A13 for maximum sound and best quality. Adjust the buzz control (R12) for MINIMUM buzz. If the hiss disappears during alignment, further reduce the signal until the hiss returns.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

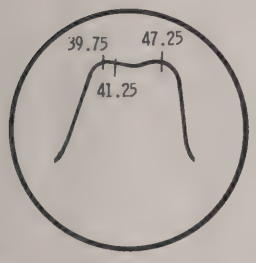


FIG.1

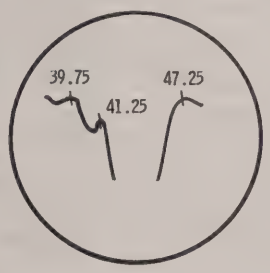


FIG.2

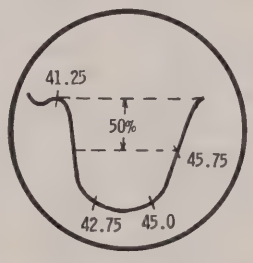


FIG.3

ZENITH MODELS A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A3010E, H, R, A3011E, Y, A3012H, R, A3013H, A3014H, R, A4007E, R (Ch. 19A20, Q, U)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	6BJ6	
V2	2nd Video IF Amp	6BJ6	
V3	3rd Video IF Amp	6BJ6	
V4	Video Output-AGC Keying	6CS8	
V5	Sound IF Amp	6AG5A	
V6	Audio 1st	6DN8	
V7	Audio Output	1/2 6 4	
		6BQ6	
V8	Sync Sep	6BW8	

ITEM No	USE	TYPE	NOTES
V9	Vert. Mult	6CG7	
V10	Vert. Output	6BX7GT	
V11	Horiz. Phase Det -		
	Horiz. AFC	6CM7	
V12	Horiz. Osc. -		
	Horiz. Discharge	6CG7	
V13	Horiz. Output	6DQ6A	
V14	Damper	6AL4GTA	
V15	HV Rectifier	1B3GT	
V16	Lv Rectifier	5AU4	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: ZENITH PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	NOTES
V17	21-1424	21CKP4 24AJP4	21CKP4	1	1 Silver Screen 65"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: ZENITH PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C3A	40	400	22-2971	AFH4-113-50	C1445 3 SR8045	FP333 2 TC81		Q-460 MTD-4520	*R3584
B	40	400							
C	40	475							
D	100	50							
C3A	4	350	22-2967	AFH3-133-40		FP146 TC70		S-270 MT-4504	*R1335
B	40	400							
C3A	40	400	22-2973	AFH3-136	C1445	FP384 2		S-615 MT-4504	*R3618
B	40	25							
C	4	350							

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: ZENITH PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C4	10000		23-5	BPD-01	DD-103	BYA6S1	ED-01	DC5U	5HK-S1	
C5	470		23-6	BPD-00047	DD-471	BYA10T4Y	ED-470	UC-5347	5GA-T47	
C6	6		22-2281							NPO ± .5 mmf
C7	1000	1000	23-17							10%
C8	12		23-2279		TCZ-12		TCO-12		MS-412	5%
C9	12		22-2279		TCZ-12		TCO-12		MS-412	5%
C10	.15	200	22-2347	P288N-15		CUBZP15		GEM-3015	2TM-P15	
C11	1.5		22-1784	NPO-S11 5	TCZ-1R5	CTA6V15C	TCO-1 5	ZT-5S15	5TCCB-V15	
C12	7		22-2813							± .5mmf
C13	470		23-16		D6-471	5RS747	ED-470		MS-347	10%
C14	10000		23-3	BPD-01	DD-103	BYA6S1	ED-01	DC5U	5HK-S1	①
C15	1000	1000	23-17							10%
C16	470		23-16		D6-471	5RS747	ED-470		MS-347	10%
C17	1000	1000	23-17							10%
C18	330		23-3867	1469-00033	D6-331	5RS733	ED-330		MS-333	10%
C19	470		23-16		D6-471	5RS747	ED-470		MS-347	10%
C20	5		22-2690							± .25mmf
C21	7.5		23-3743							
C22	.01	200	23-2566							10%
C23	47		23-3467		TCZ-47	CTO0T7C	TCO-47		MS-447	5%
C24	1	200	22-1777	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C25	1000	1000	23-17	DAC-2	BPD-103	BYA10G1M	HD45-1000	DC301	5GA-D1	
C26	3.3		23-3343		NPO-S1 3.3	TCZ-3R3	CTA6V33C	TCO-3.3	ZT-5S33	5TCCB-V33
C27	80		23-3480		S2 80	D6-500	LT6Q8	GP-50	UC-545	5GA-Q8
C28	1000	1000	23-17							10%
C29	7.5		23-3743							
C30	1000	1000	23-17							10%
C31	100		22-5	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C32	10		22-2731							N150 ± .5mmf
C33	10000		23-3	BPD-01	DD-103	BYA6S1	ED-01	DC5U	5HK-S1	
C34	10000		23-3	BPD-01	DD-103	BYA6S1	FD-01	DC5U	5HK-S1	
C35	4700		23-14	BPD-0047	DD-472	BYA10G47	ED-0047	UC-5347	5HK-D47	
C36	470	1000	23-5	EVD-15-470	D6-471	BYA10T4Y	HD15-470	DC30347	5GA-T47	
C37	100		23-3802		TCN-100		TCT-100			N750 5%
C38	.0068	200	23-3666							10%
C39	10000		23-3	BPD-01	DD-103	BYA6S1	ED-01	DC5U	5HK-S1	
C40	.047	200	22-1778	P288N-047	DF-503	CUB2S47		GEM-4147 GEM-2022	2TM-S47	10%
C41	22	200	22-2975							10%
C42	470		22-16		D6-471	5RS747	ED-470		MS-347	10%
C43	3300		23-11	BPD-0033	DD-333	BYA10D33	ED-0033	UC-5233	5GA-D33	
C44	.1	200	22-1777	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C45	27		22-2459	S1 27	D6-270	LT6Q27	GP-27	UC-5427	5GA-Q27	
C46A	4700		22-24	BPD-2X0047	DD-472 DD-472	BYC5DD47	FD-0047 ED-0047	UC-5247 UC-5247	5HK-2D47	
B	4700					BYA10DIM	HD45-1000	DC302	5GA-D1	
C47	1000	1000	23-17	DAC-2				GEM-16288		10%
C48	0068	600	23-2977					GEM-16288		10%
C49	0068	600	22-2501					GEM-16288		10%
C50	.033	600	22-2535							10%
C51	.1	400	23-2001	P498N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C52	.033	600	22-2535							10%
C53	.047	200	22-1778	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C54A	100		22-22	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
B	100			BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C55	4700	1000								10%
C56	4700		22-14			1RS5D1				10%
C57	1000		23-17			1RS5D1	ED-1000	MCB255	MS-31	10%
C58	.047	200	22-1778	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C59	.1	200	23-1777	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C60	680		22-2966	1464-00068	D6-681	1R5T68	ED-680		MS-368	10%
C61	1100		23-3869	1464-0011		1R5D11			MS-311	10%
C62	1800		23-3868	1464-0015	D6-152	1W5D15	ED-1500	MC356	1FM-S15	
C63	10000		23-3	BPD-01	DD-103	BYA6S1	ED-01	DC5U	5HK-S1	①
C64	4700		22-14	BPD-0047	DD-472	BYA10D47M	ED-0047	UC-5247	5GA-D47	
C65A	1500		22-23	BPD-2X0015	DD-152 DD-152	BYC5DD15	ED2-0015	DCD6215	5HK-2D15	
B	1500									
C66	01	400	22-1784	P488N-01	DD-103	CUB4S1	GP-10000	GEM-401	4TM-S1	
C67	.1	400	22-1841	P488N-1	DF-104	CUB4P1		GEM-601	6TM-P1	
C68	75	4000	22-2954							N1500 10%
C69	82	2000								10%
C70	45	4000	22-2958							10%

① Some versions may use 1000mmf ② 1000V 10% (Part #23-17) in this application.

CONTROLS

ITEM No.	RATING: RESIST ANCE	WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	63-6010		A47T3-1meg		FP3S716	Volume - Tap ① 1meg
B	Shaft				FS-3		Not Req.	
C	Switch				SWE-12		Not Req.	
R3A	1meg	½	63-6014	B-70	A47-1meg-2	Q3-137	TA16A	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	3meg	½	63-6013	B-84	A47-3meg	Q1-140	TA36L	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	2000Ω	2(WW)	63-4001	WW-753 †	A42-7500			Contrast
B	Shaft			Not Req.	DFB-1/3			
R5A	50K	½	63-3673	B-50	A47-250K-S	Q1-130	U46	Brightness
B	Shaft			Not Req.	ESE-3	Not Req.	Not Req.	
R8A	1.5meg	½	63-4003	B-743	A47-1.5meg -S	Q1-139	TA18SL	Vert. Hold
B	Shaft			Not Req.	ESE-3	Not Req.	Not Req.	
R7A	5meg	½	63-4013	AB-88	A47-5meg-2	EU-141	U65	Fringe lock
B	Shaft			AK-1	FKH-1/4	TMU-KH	Not Req.	
R8A	3meg	½	63-4026	AB-84	A47-3meg-S	Q1-140	TA36L	Focus
B	Shaft			AK-1	FKH-1/4	RQ	Not Req.	
R9A	20K	½	63-4021	AB-23	A47-20K-S	Q1-119	U36	AGC
B	Shaft			AK-1	FKH-1/4	RQ	Not Req.	
R10A	1meg	½	63-3819	AB-89	A47-1.5meg -S	Q1-143	U83	Vert. Size
B	Shaft			AK-1	FKH-1/4 -S	RQ	Not Req.	
R11A	1500Ω	½	63-3820	AB-6	A47-1500-S	Q1-109	PTA153L	Vert. Lin.
B	Shaft			AK-1	FKH-1/4	RQ	Not Req.	
R13	2000	3(WW)	63-3284		3S-800		FL-750	Buss

† Saw off shaft and file double flat as needed.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	ZENITH PART No	NOTES
R13	2.2meg		63-4026	
R14	22K		63-1641	Note 1
R15	68Ω		63-1737	
R16	18K		63-1834	
R17	56Ω		63-1733	
R18	1500Ω		63-1792	
R19	120K		63-1873	
R20	120K		63-1873	
R21	15K		63-2372	
R22	82Ω		63-1715	
R23	220Ω		63-1758	
R24	220Ω		63-1758	
R25	82000	4	63-3603	
R26	130Ω		63-1747	
R27	270Ω		63-1803	
R28	15K		63-1834	
R29	1900Ω	1	63-3268	
R30	56000	2	63-3233	
R31	1000Ω		63-1755	
R32	330Ω		63-1788	
R33	27K	2	63-347	
R34	82Ω		63-1715	
R35	150K		63-1875	
R36	27K		63-1945	
R37	100K		63-1880	
R38	220K		63-1884	
R39	56K 5%		63-4058	
R40	3900Ω		63-1813	
R41	100K		63-1869	
R42	100K		63-1869	
R43	470K		63-1898	
R44	2.2meg		63-1953	
R45	12meg			Note 2
R46	1.5meg		63-1918	
R47	180K		63-1880	
R48	68K		63-1863	
R49	100K		63-1870	
R50	10K		63-1827	
R51	390K		63-1894	
R52	680Ω		63-1779	
R53	27K	2	63-347	
R54	470Ω		63-1771	
R55	2.2meg		63-1953	
R56	10K		63-1827	Note 2
R57	100K		63-1870	
R58	3300Ω		63-1806	
R59	470Ω	1	63-3398	

ITEM No.	RATING: OHMS	WATT	ZENITH PART No	NOTES
R60	220Ω		63-1757	
R61	150K		63-1877	
R62	4700Ω		63-1813	
R63	18K		63-1831	
R64	100K		63-1870	
R65	470K		63-1898	
R66	470K		63-1897	
R67	100K		63-1869	
R68	15K		63-1834	
R69	5600Ω		63-1817	
R70	15K		63-1834	
R71	47K	2	63-1817	
R72	6800Ω		63-1830	
R73	270K	1	63-3189	
R74	1000Ω		63-1755	
R75	1meg		63-1961	
R76	270K		63-1897	
R77	18K		63-1838	
R78	330Ω		63-1758	
R79	1.5meg		63-1953	
R80	220Ω		63-1758	
R81	330Ω	1	63-3198	
R82	330Ω	1	63-3286	
R83	560Ω		63-1776	
R84	560Ω		63-1776	
R85	100K		63-1869	
R86	100K		63-1869	
R87	1meg		63-1961	
R88	100K		63-1869	
R89	68K		63-1863	
R90	390Ω		63-1768	
R91	10K	2	63-3149	
R92	22K		63-1843	
R93	39K			Note 3
R94	180K	1	63-3313	
R95	150K		63-1876	
R96	18K		63-1838	
R97	100Ω		63-1744	
R98	1meg		63-1912	
R99	100Ω		63-1744	
R100	82000	4	63-3603	
R101	1000Ω		63-1755	
R102	56K	2	63-3241	
R103	8.8Ω		63-3305	
R104	22K	1	63-3055	
R105	220K	1	63-3607	

Note 1 Some versions may use 33K (Part #63-4008) in this application.
Note 2 Not used in some versions
Note 3 Some versions may use 47K (Part #63-1856) in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	940 VCT	6V	95-1561						
	② 3A	② .290A	② 3A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V									
	@10 4A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	95-1558	Z1900 ①	A-2821	V31E ②	A-8146 ②			
T3A	Yoke -Horiz. (33MH)	95-1580	DF808	MDF-91	Y90P12/47	DY-13A	Y-39	Y-40 & NW 4 ③	
B	(90°)-Vert. (42MH)		①④	①④	①④	②④			
M3	Rear Cover & Centering Device	S-23237							
T4	Horiz. Output	S-41988							

① Connect as autoformer. Use 7 to 1 turns ratio.
② Cut and tape blanking lead.
③ Connect yoke terminal #3 to horizontal output transformer #3, yoke terminal #7 to 10000 resistor (R101), yoke terminal #4 to horizontal output transformer #1. Connect damping capacitor across yoke terminals #3 and #7. Cut and form a piece of .010 gauge fish paper inside the yoke itself and support with an acetate cement to provide an insulation between the width sleeve and the yoke proper.
④ Use original damping network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI	SEC.	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	7000Ω	3-4Ω	95-1567	Z1113	A-3030①	AU-806	A-3878 ①	26S48 ①	S-2X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V C IMP	REPLACEMENT DATA: ZENITH PART No.	QUAM PART No.	NOTES
SP1	6"	PM	8-8Ω	49-327 ①	8AU26.4	① Used in Models A3236J, JU, A3350E, EU, H, HU, R, RU
SP2	8"	PM	8-8Ω	49-327 ①	8AU26.4	② Two used in Models A3256E, EU, R, RU, A3256E, EU,
	3 1/4"	Electrostatic		S-23830 ②		H, HU, R, RU, A3263M, MU, R, RU, A3301E, H, R,
				49-313 ③		A30U, E, Y, A3012, H, R, A3012E, A3014E, R, A4007E, R
				49-330 ④		③ Used in Models A3256J, JU
				49-331 ⑤		④ Two used in Models A3256E, EU, H, HU, R, RU,
				49-332 ⑥		A3013E, H, A3033E
						⑤ Two used in Modls A30U, E, Y
						⑥ Used in Models A3256E, EU, A, RU, A3263M, MU, R,
						RU, A3301E, H, R, A3014E, R, A4007E, R

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Meisner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1A	1st. Video IF	S-41887					
B	41.25MC Trap	S-41885					
L2A	47.25MC Trap	S-41885					
B	45.75MC Trap						
L3A	2nd Video IF	S-41890					Note 1
B	47.25MC Trap						
L4	3rd. Video IF	S-41891	17-4533 ▲	TV-130 ▲	6324 ▲	VK-2 ▲	
L5	4th. Video IF	S-41897					Note 2
L6	Series Peaking Coil	S-41879	19-3075	TV-196	6172		82 Microhenries
L7	Shunt Peaking Coil	S-41880	19-3180	TV-196	6130		163 Microhenries
L8	RF Choke	S-21868	19-1004	RC-866	4610		6.7 Microhenries
L9A	4.5MC Trap	S-41890					Note 3
B	1st. Sound IF						
L10	Series Peaking Coil	S-42624	19-3100 *	TV-194 *	6112 *	VP-4 *	110 Microhenries, wound on 5600Ω resistor
L11	2nd. Sound IF	S-43054					Note 4
L12	Quadrature Coil	S-19030	20-1005 ▲	TV-121	1680 ▲		
L13	RF Choke	S-22777	19-1009	RC-596	4612		

* Parallel with 56000 resistor.
▲ Drill new mounting hole.
Note 1. Alternate part #S-41889.
Note 3. Alternate part #S-41895.
Note 3. Alternate part #S-41893.
Note 4. Alternate part #S-41896 (includes cap.)

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES.: PRI	SEC.	REPLACEMENT DATA: ZENITH PART No.	Meisner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L14	1641*		S-19743	19-1577	TV-189	6324		HS-8	* Tapped @ 641Ω

FILTER CHOKE

ITEM No	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Cy.)	REPLACEMENT DATA: ZENITH PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
L15	290A	52Ω	1 4 Hy.	95-1559	C5037 ①	C-2898 ①		C-2326 ①	28C44	C-32X

① Drill new mounting hole.

FUSES

ITEM No	TYPE	RATING	REPLACEMENT DATA: ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	4/10A-125V-8/B	136-37	62-18	333 400 (N 4/10 A-125V-8/B)	348009	N 4/10	HN 3/10 to 1/2

CRYSTAL DIODES

ITEM No	ORIG TYPE	REPLACEMENT DATA: ZENITH PART No.	CBS PART No	SYLVANIA PART No	NOTES
M2	1N64	103-23	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No	PART NAME	ZENITH PART No.	NOTES
M3	Tuner	S-41712	VHF - Ch. 19A20, Q
	Tuner	S-41713	UHF-VHF - Ch. 19A20U
	Shaft Sleeve	S-41945	UHF - Ch. 19A20U
M4	Width Sleeve		
M5	Centering Device	S-23237	Includes yoke cover
M6	Magnet	S-41928	Anti-Pincushion (2 used)

ZENITH MODELS A3236J, JU, A3350E, EU, H, HU, R, RU, A3256E, EU, R, RU, A3256M, MU, R, RU, A3263M, MU, R, RU, A3301E, H, R, A3013E, Y, A3013M, R, A3013N, A3014M, R, A4007E, R (CH. 19A20, Q, U)

FOLDER 4

PARTS LIST AND DESCRIPTIONS (Continued)

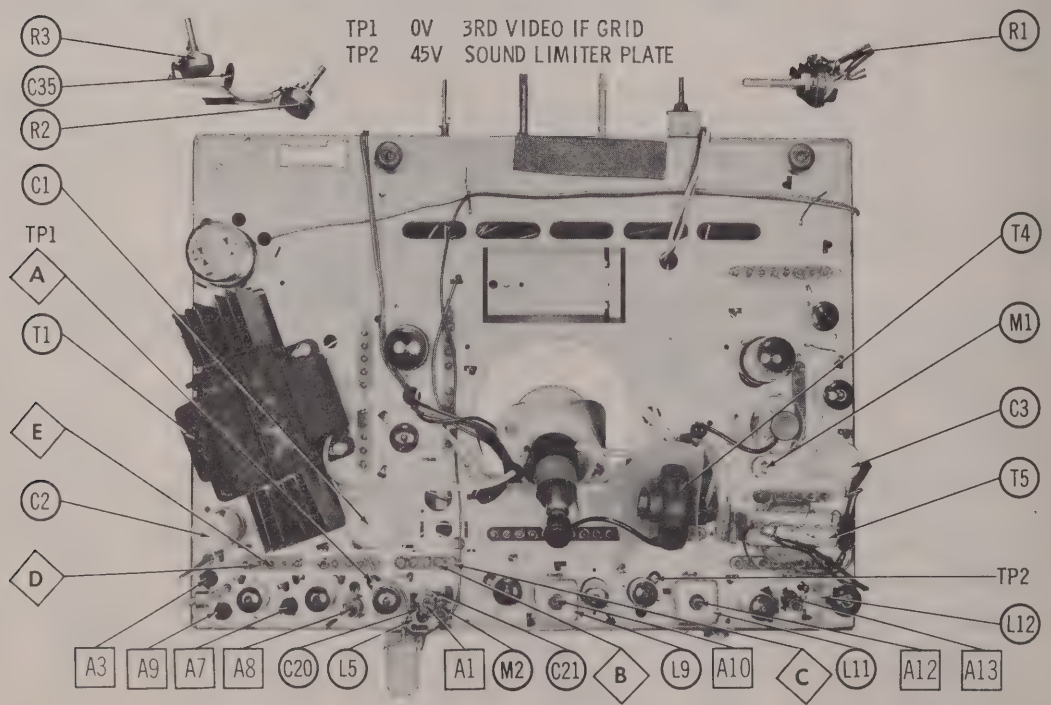
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	192-239	Used in Models not equipped with remote tuning
Safety Glass	192-242	Models A3010E, H, R, A3011, E, Y, A3012H, R, A3013H, A3014H, R
Safety Glass	192-244	Models A4007E, R
Knob	S-41960	Channel Selector - Models A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A4007E, R
Knob	S-42044	Channel Selector - Models A3010E, H, R, A3011, E, Y, A3012H, R, A3013H, A3014H, R
Knob	S-22863	Fine Tuning - Models A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A4007E, R
Knob	S-42039	Fine Tuning - Models A3010E, H, R, A3011, E, Y, A3012H, R, A3013H, A3014H, R
Knob	S-42058	UHF Dial
Knob	46-1834	On-off-volume - Models A2329J, JU, A2330E, EU, H, HU, R, RU, A2358E, EU, R, RU, A2359E, EU, H, HU, R, RU, A2362M, MU, R, RU, A4007E, R
Knob	46-1806	On-off-volume - Models A3010E, H, R, A3011, E, Y, A3012H, R, A3013H, A3014H, R
Knob	S-41485	Vert. Hold & Brightness
Knob	S-41946	Contrast
Knob	46-1807	Bass & Treble
Cabinet	14-2250	Models A2330H, HU
Cabinet	14-2243	Models A2329J, JU
Cabinet	14-2245	Models A2330E, EU
Cabinet	14-2244	Models A2330R, RU
Cabinet	14-2306E	Models A2358E, EU
Cabinet	14-2306R	Models A2358R, RU
Cabinet	14-2290E	Models A2359E, EU
Cabinet	14-2290H	Models A2359H, HU
Cabinet	14-2290R	Models A2359R, RU
Cabinet	14-2282M	Models A2362M, MU
Cabinet	14-2282R	Models A2362R, RU
Cabinet	14-2289E	Model A3010E
Cabinet	14-2289H	Model A3010H
Cabinet	14-2289R	Model A3010R
Cabinet	14-2291	Model A3011
Cabinet	14-2291E	Model A3011E
Cabinet	14-2291Y	Model A3011Y
Cabinet	14-2295H	Model A3012H
Cabinet	14-2295R	Model A3012R
Cabinet	14-2303H	Model A3013H
Cabinet	14-2278H	Model A3014H
Cabinet	14-2278R	Model A3014R
Cabinet	14-2302E	Model A4007E
Cabinet	14-2302R	Model A4007R

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CHASSIS– TOP VIEW

TUNER **PARTS LIST AND DESCRIPTIONS**

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BK7A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6U8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	40		22-2511							5%
C202	40		22-2511							5%
C203	40		22-2511							5%
C204	40		22-2511							5%
C205	800		22-2331	BPD-0008	DD-801		ED-0008		5GA-T8	
C206	800		22-2577							
C207	2.4		22-2596							5%
C208	2.5-6		22-2221							
C209	800		22-2577							
C210	1000		22-2732	EF-001	MFT-1000				503C-D1	
C211	800		22-2331							
C212	.85-2.3		22-2453							
C213	.6-3.0		22-2504							
C214	19		22-2406							$2\frac{1}{2}$%
C215	120		22-2591		TCZ-120		TCO-120			5%
C216	800		22-2577							
C217	800		22-2577							
C218	2		22-2585	NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	
C219	2		22-2434	NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	10%
C220	5.6		22-2499							±.25mmf
C221	3.4		22-2592							±.25mmf
C222	1000		22-2732	EF-001	MFT-1000				503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R201	22K			
R202	470K			
R203	47K			
R204	100K			
R205	100K			
R206	4700Ω			
R207	470Ω			
R208	1000Ω			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R209	68K			
R210	100K			
R211	10K			
R212	10K	2	63-3170	
R213	2200Ω			
R214	470Ω	1	63-2398	
R215	22K			

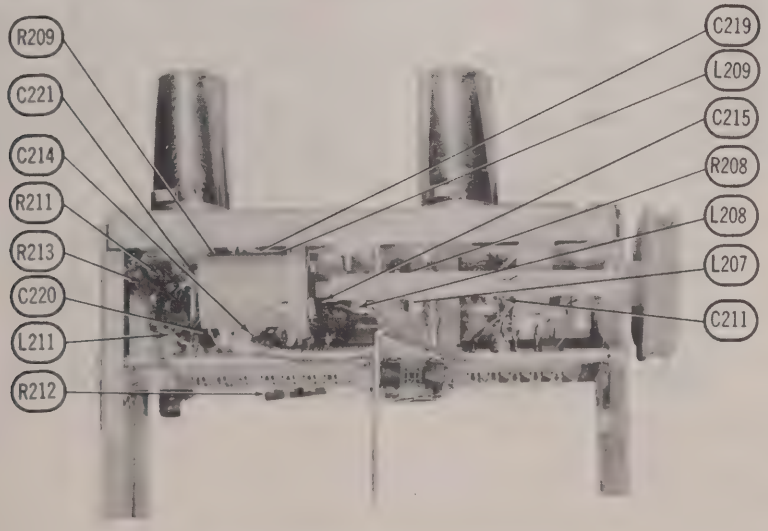
COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	IF Trap Coil	20-490	
L202	IF Trap Coil	20-505	
L203	IF Trap Coil	20-505	
L204	IF Trap Coil	20-490	
L205	IF Trap Coil	20-490	
L206	IF Trap Coil	20-490	
L207	Neut. Coil	20-431	

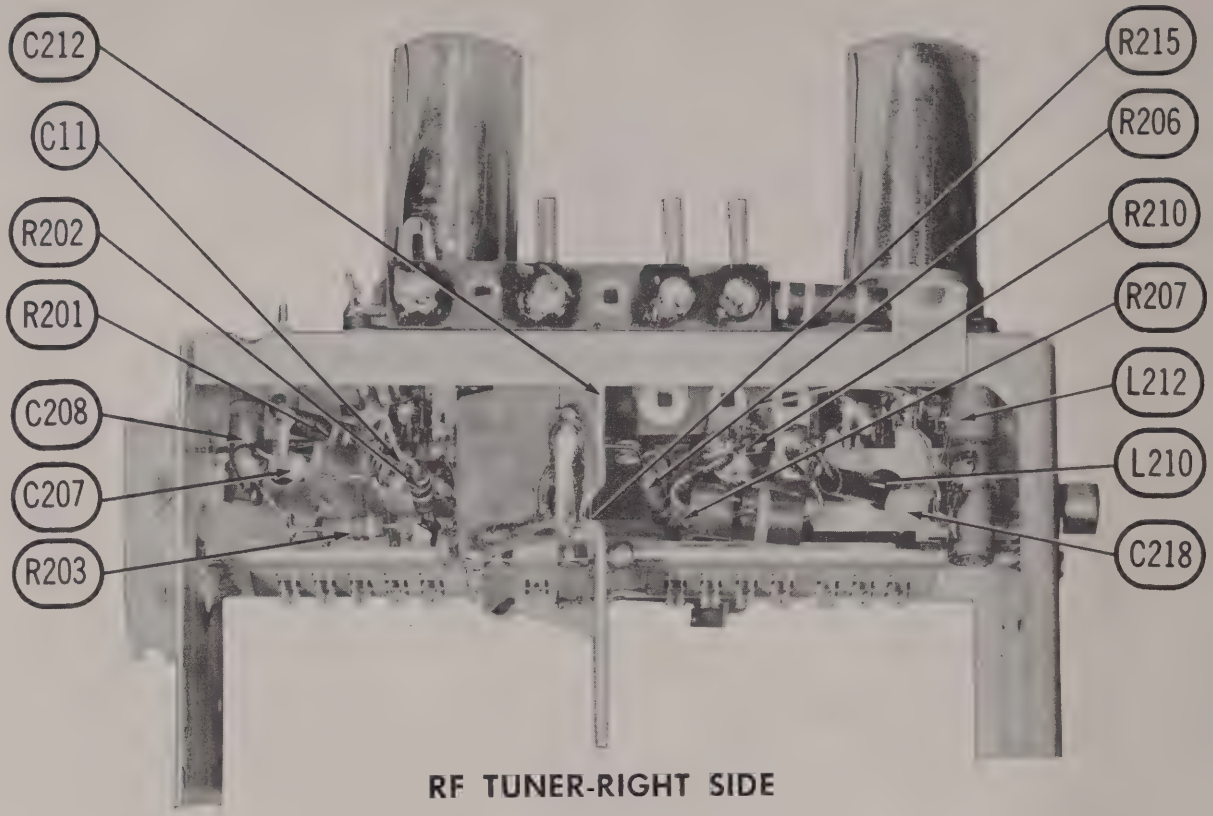
ITEM No.	USE	ZENITH PART No.	NOTES
L208	RF Coil	20-537	
L209	Mixer Grid Coil	20-538	
L210	RF Choke	S-18859	
L211	Osc. Coil	20-541	
L212	Mixer Plate Coil	S-22702	

MISCELLANEOUS

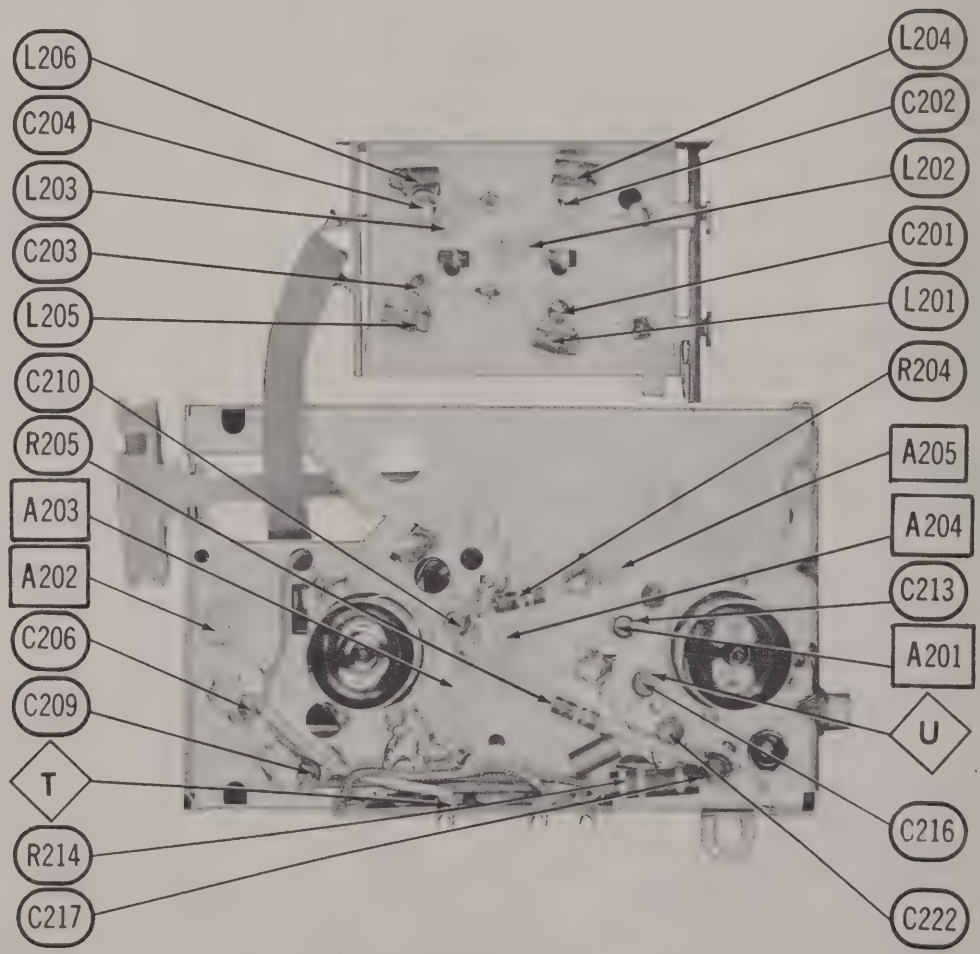
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M201	Dial Lamp	100-198	#39



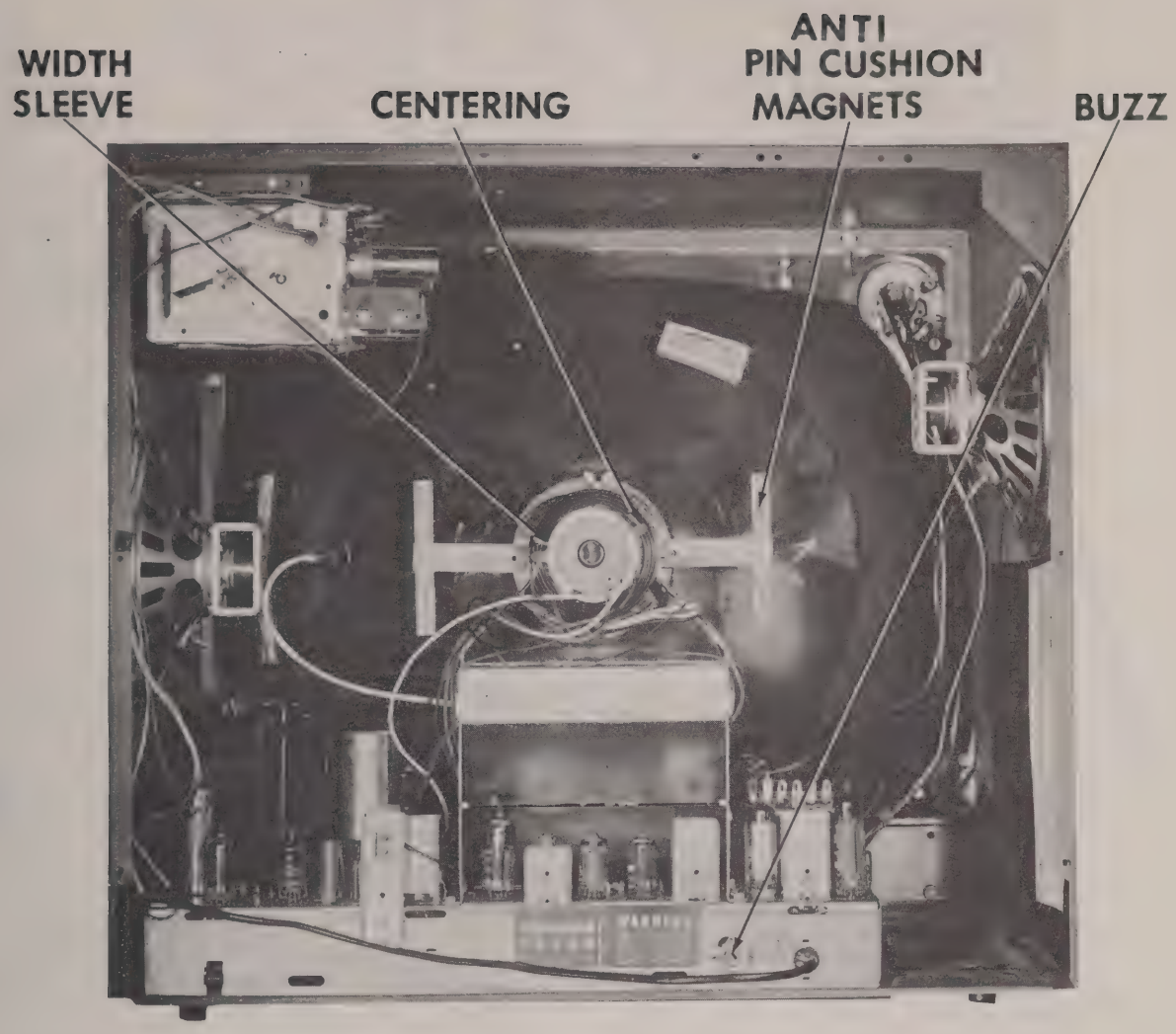
RF TUNER—LEFT SIDE



RF TUNER-RIGHT SIDE



RF TUNER-TOP VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the brightness and contrast controls for a normal picture.

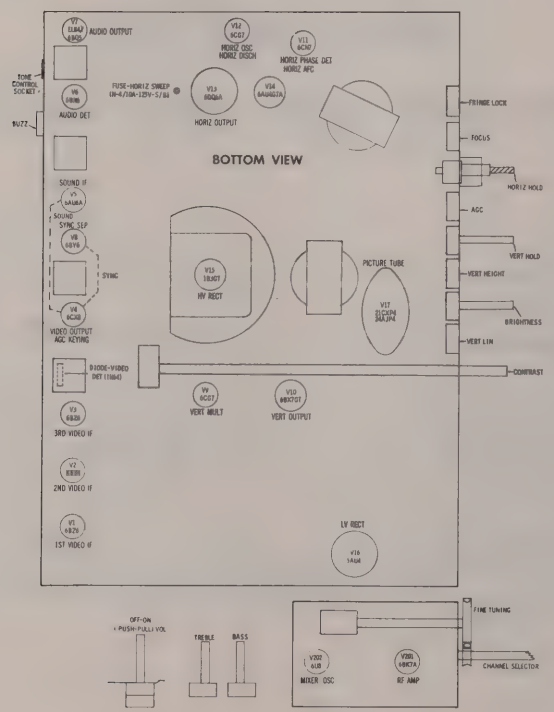
Turn tne horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.4meg	1500Ω	.1Ω	0Ω	††240Ω	†1240Ω	0Ω		
V2	6BZ6	60K	††22Ω	.1Ω	0Ω	†220Ω	†220Ω	INF		
V3	6BZ6	.1Ω	120Ω	.1Ω	0Ω	†8200Ω	†8200Ω	0Ω		
V4	6CX8	• 11K	4700Ω	1.1meg	.1Ω	0Ω	22Ω	2700Ω	†23K	†4500Ω
V5	6AU6A	100K	0Ω	.1Ω	0Ω	†37K	†37K	0Ω		
V6	6BN6	• 270Ω	.2Ω	.1Ω	0Ω	†27K	4.5Ω	†390K		
V7	EL84 / 6BQ5	NC	13K	220Ω	0Ω	.1Ω	NC	†1000Ω	NC	†470Ω
V8	6BY6	500K	0Ω	.1Ω	0Ω	†90K	†47K	15meg		
V9	6CG7	• ‡5meg	•1.4meg	0Ω	0Ω	.1Ω	‡320K	6800Ω	1000Ω	0Ω
V10	6BX7GT	1.8meg	†730Ω	• 600Ω	1.8meg	†730Ω	• 600Ω	.1Ω	0Ω	
V11	6CN7	0Ω	200K	100K	0Ω	.1Ω	390Ω	1.2meg	†68K	NC
V12	6CG7	‡240K	39K	0Ω	0Ω	.1Ω	†0Ω	32K	10K	NC
V13	6DQ6A	TP	.1Ω	TP	†8300Ω	1meg	TP	0Ω	0Ω	TOP CAP ‡10.5Ω
V14	6AU4GTA	TP	NC	¶	NC	†.9Ω	NC	0Ω	.1Ω	
V15	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡280Ω
V16	5AU4	NC	¶	TP	24Ω	TP	25Ω	NC	¶	
V17	21CXP4	0Ω	23K	PIN 6 • ‡350K	PIN 10 65K	PIN 11 • 210K	PIN 12 .1Ω			
V201	6BK7A	†940Ω	60K	60K	0Ω	.1Ω	60K	4meg	0Ω	0Ω
V202	6U8	†10K	68K	†100K	.1Ω	0Ω	†470Ω	0Ω	2200Ω	12K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
†† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT* Folder

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 13 IN SET 371

Trav-Ler Models 1700, 1710, U (Ch. 72916, 73016) were covered in Photofact Folder 13 —Set 371. Following is a list of new models, chassis, picture tube and tuners used in each receiver which are being added with the publication of this bulletin.

MODEL	CHASSIS	PICTURE TUBE	TUNER
717-MT-500	775-37	17AVP4A	TA-75
721-K-610	718-17	21CBP4A	TA-18AC
721-K-610	775-17	21CBP4A	TA-75
721-K-611	736-47	21CBP4A	TA-36
721-K-611U	737-47	21CBP4A	TA-37
721-K-612	736-47	21CBP4A	TA-36
721-K-613	736-47	21CBP4A	TA-36
721-LP-650	718-17	21CBP4A	TA-18AC
721-LP-650	775-17	21CBP4A	TA-75
721-LP-651	736-47	21CBP4A	TA-36
721-LP-651U	737-47	21CBP4A	TA-37
721-MT-600	718-17	21CBP4A	TA-18AC
721-MT-600	775-17	21CBP4A	TA-75
721-MT-601	736-47	21CBP4A	TA-36
721-MT-601U	737-47	21CBP4A	TA-37
721-T-602	736-47	21CBP4A	TA-36
724-K-772	776-17	24AEP4	TA-76
1710	72917	17AVP4A	TA-29-1
1710	775-27	17AVP4A	TA-75
1710A	72917A	17AVP4A	TA-29AC
1715	72916	17AVP4A	TA-29
1715	72917	17AVP4A	TA-29-1
1715U	73016	17AVP4A	TA-30
1720	72916	17AVP4A	TA-29
1720	72917	17AVP4A	TA-29-1
1720U	73016	17AVP4A	TA-30
1722	740-17	17BJP4	TA-40
1723	740-17	17BJP4	TA-40
1725	740-17	17BJP4	TA-40

TRAV-LER CHASSIS 718-17, 736-47, 737-47, 740-17, 775-17, 775-27, 775-37, 776-17, 72916, 72917, 72917A, 73016

PRODUCTION CHANGES
BULLETIN 204

(Continued on Reverse Side)

SET 394 FOLDER 5

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America

Chassis 736-47	TUNER IDENTIFICATION Tuner #TA-36 is used in chassis 736-47 and is electrically identical to tuner #TA-29 covered in Photofact Folder 13 — Set 371.
Chassis 737-47	Tuner #TA-37 is used in chassis 737-47 and is electrically identical to tuner #TA-30 covered in Photofact Folder 13 — Set 371.
Chassis 72917A	Tuner #TA-29AC is used in chassis 72917A. A schematic of this tuner is given in Fig. 1.
Chassis 718-17	Tuner #TA-18AC is used in chassis 718-17. A schematic of this tuner is given in Fig. 2.
Chassis 740-17	Tuner #TA-40 is used in chassis 740-17. A schematic of this tuner is given in Fig. 3.
Chassis 775-17, 775-27, 775-37	Tuner #TA-75 is used in chassis 775-17, 775-27 and 775-37. A schematic of this tuner is given in Fig. 4.
Chassis 776-17	Tuner #TA-76 is used in chassis 776-17. A schematic of this tuner is given in Fig. 4.
Chassis 740-17	COMPONENT CHANGES R1A, volume control, is changed to part #VC-115.
Chassis 736-47, 737-47	R1A, volume control, is changed to part #VC-117. R7A, brightness control, is changed to part #VC-109. Some models may use a 5" PM speaker (SP1 - Part #SPK-36) or a 6" PM speaker (SP1 - Part #SPK-62).
Chassis 718-37, 775-37	R1A, volume control, is changed to part #VC-116. R7A, brightness control, is changed to part #VC-109. Some models may use a 5" PM speaker (SP1 - Part #SPK-36) or a 6" PM speaker (SP1 - Part #SPK-62). A filament transformer for the tuner filaments has been added from pin 8 of V11 to ground. V13 (picture tube) now becomes the last tube in the filament string. The part number for this transformer is TR-30.

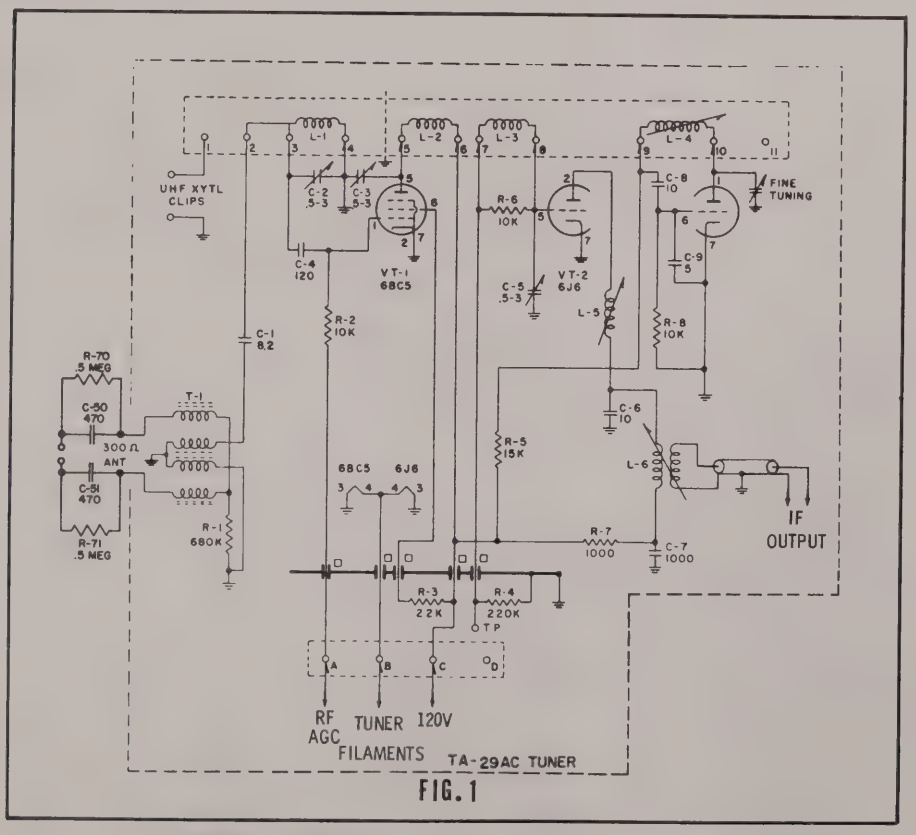
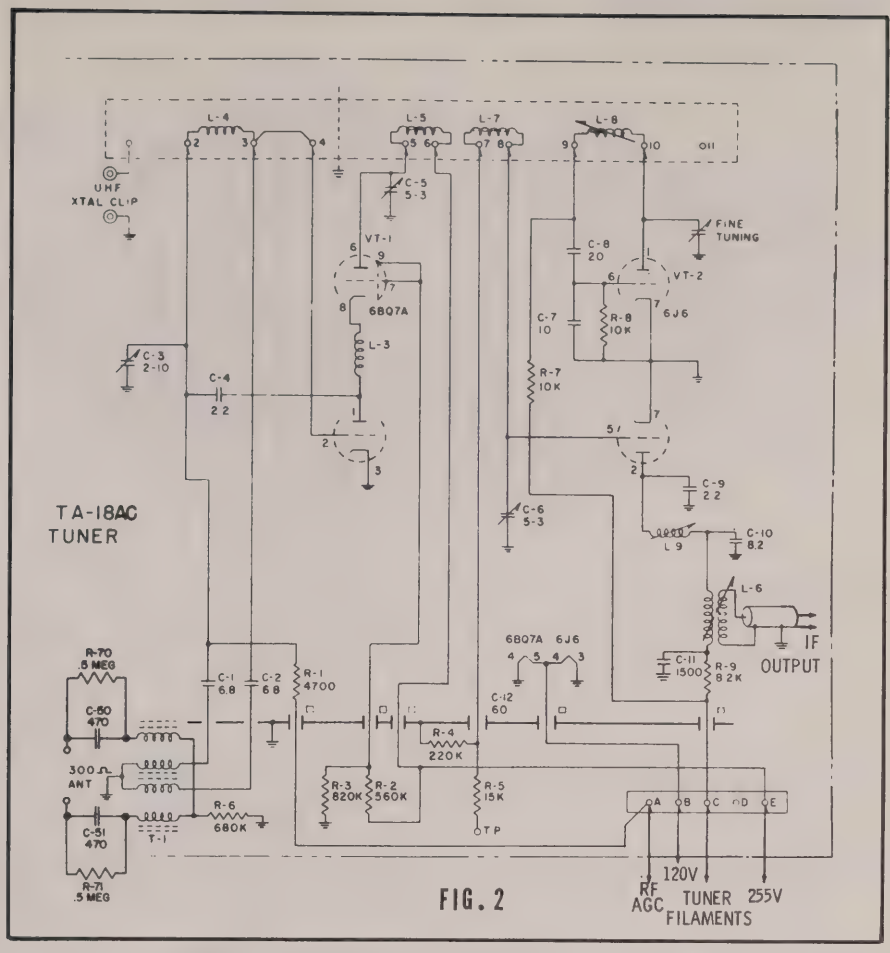
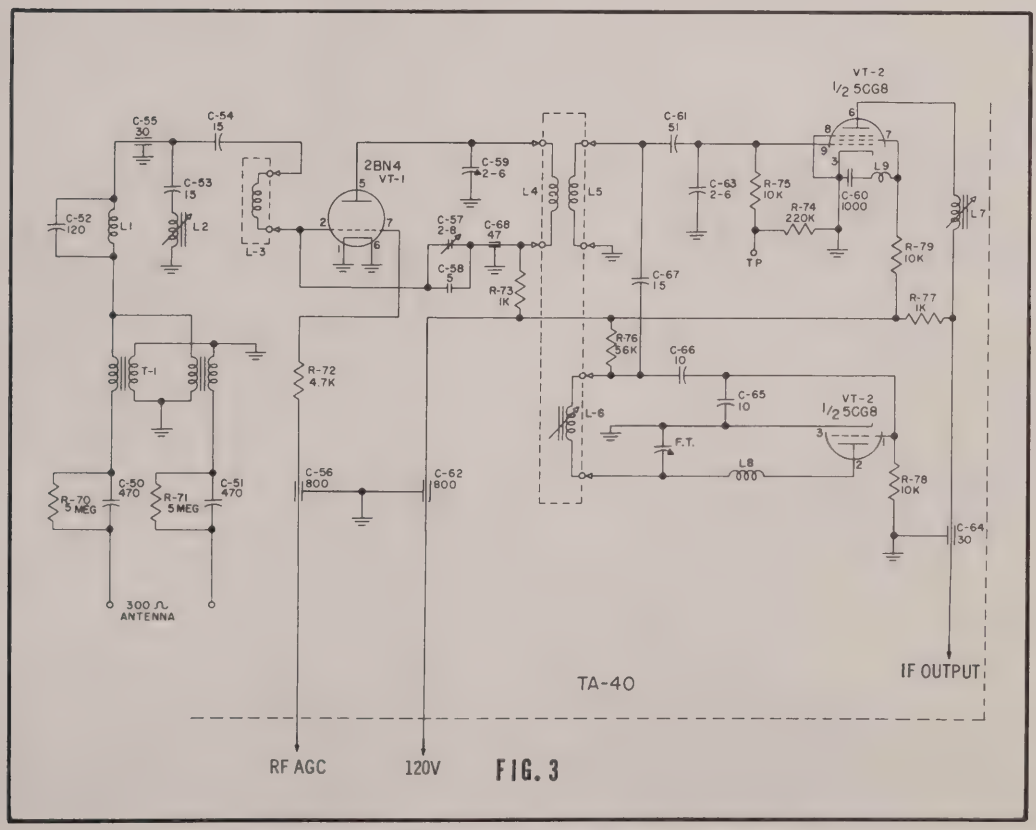


FIG. 1

SCHEMATIC COURTESY OF TRAV-LER RADIO AND TELEVISION CORP.



SCHEMATIC COURTESY OF TRAV-LER RADIO AND TELEVISION CORP.



SCHEMATIC COURTESY OF TRAV-LER RADIO AND TELEVISION CORP.

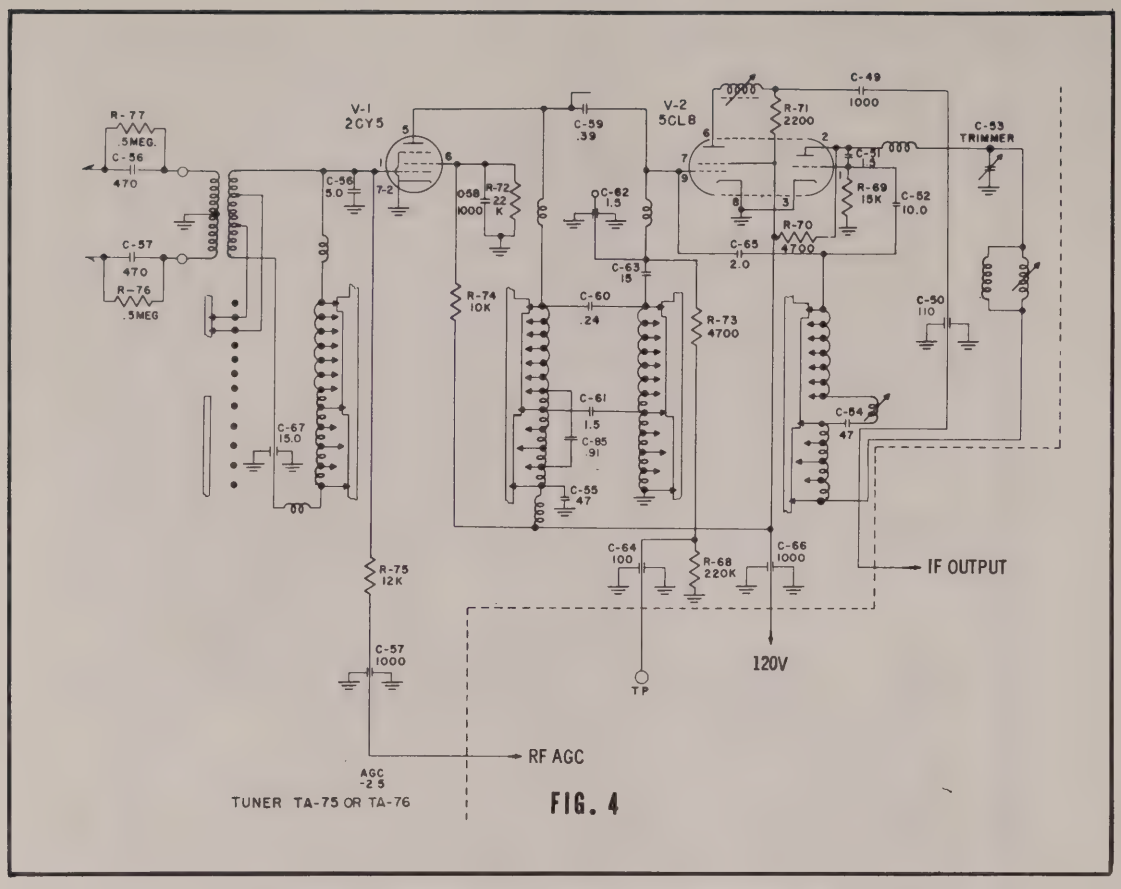


FIG. 4

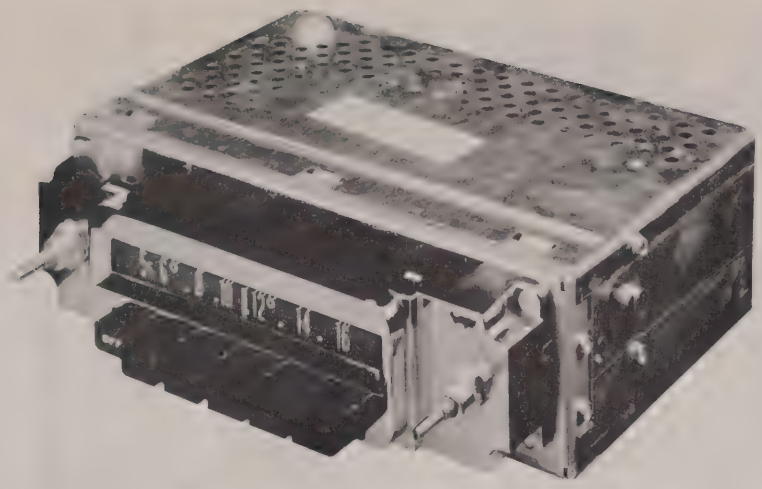
SCHEMATIC COURTESY OF TRAV-LER RADIO AND TELEVISION CORP.

PHOTOFACT* Folder

EIA

AMERICAN MOTORS
MODEL 8990494

AMERICAN MOTORS
MODEL 8990494



TRADE NAME	American Motors Model 8990494 (For 1958 Hudson Ambassador, Nash, Rambler, Rambler Rebel Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Four)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12DK7 Det.-AVC-AF Amp.
POWER SUPPLY	12 Volt Storage Battery RATING 1.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540KC-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400∿ Mod)	High freq. end stop.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"

It is not necessary to perform steps 3, 4, and 5 unless the tuner has been tampered with or associated components have been replaced. If necessary, remove dial scale background bracket to expose core adjustments. Back tuning cores (A8, A9, A10) 1" out of coils. (Alignment tool Part #66A76278 may be used.)

3.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	High freq. end stop.	Across voice coil	A5, A6, A7	Adjust for maximum output.
4.	"	"	1020KC	49/64" from high freq. end stop.	"	A8, A9, A10	"
5.	"	"	1610KC	High freq. end stop.	"	A5, A6, A7	Adjust for maximum output. Repeat steps 4 and 5 until no further improvement is noted. Step 5 should be the last step. (Cement cores).

With radio installed in car and antenna fully extended, tune in weak station near 1400KC and adjust A7 for maximum volume.

PUSHBUTTON ADJUSTMENT

1. Allow receiver to warm up for 15 minutes. Antenna should be in its lowest position.
2. Press pushbutton to the left, then pull out.
3. Tune manually to desired station. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

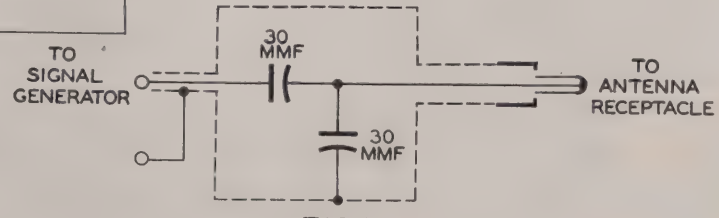


FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

AMERICA MOTORS
MODEL 8990494

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	
V4	Det. -AVC-AF Amp.	12DK7	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	2N155		2N176	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	500	16	23B539261	AFH2-02-10	B0045	WP200.5			R2452 *
B	100	16							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	20-150		20B532899							
C3	.1	200	8R121573	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C4	18		21R120578							N150 10%
C5A	50-260									
B	47		20B539612							
C	120-210									
C6	100		21R124032							N220 5%
C7	10000	1000	21R122789	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C8	100		21R410036	N750-DI 100	TCN-100	C10T1U	TC7-100	NT-531	5TCU-T1	N750 10%
C9	100		21R400537	N750-DI 100	TCN-100	C10T1U	TC7-100	NT-531	5TCU-T1	N750
C10	3300		21R120422	BPD-0033	DD-332	BYA10D33	ED-0033	UC-5233	5GA-D33	
C11	1000		21R410127	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C12	10000	1000	21R122789	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4meg	½	18B560145	F1-82			■ UE3786	Tone
B	1meg	½		R2-56				Volume - Tap ⓐ 500K
R2	210Ω	2(WW)	18K540718		39-200			Bias Adjustment

■ STA-LOC Equivalent; FA46L, OS1750, RU16T55, IS2312.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	3.3meg		6K119407	
R4	1.5meg		6R3966	
R5	15meg		6R488264	
R6	1.5meg		6R6460	
R7	3.3meg		6K119407	
R8	47K		6R6048	
R9	12meg		6R400334	

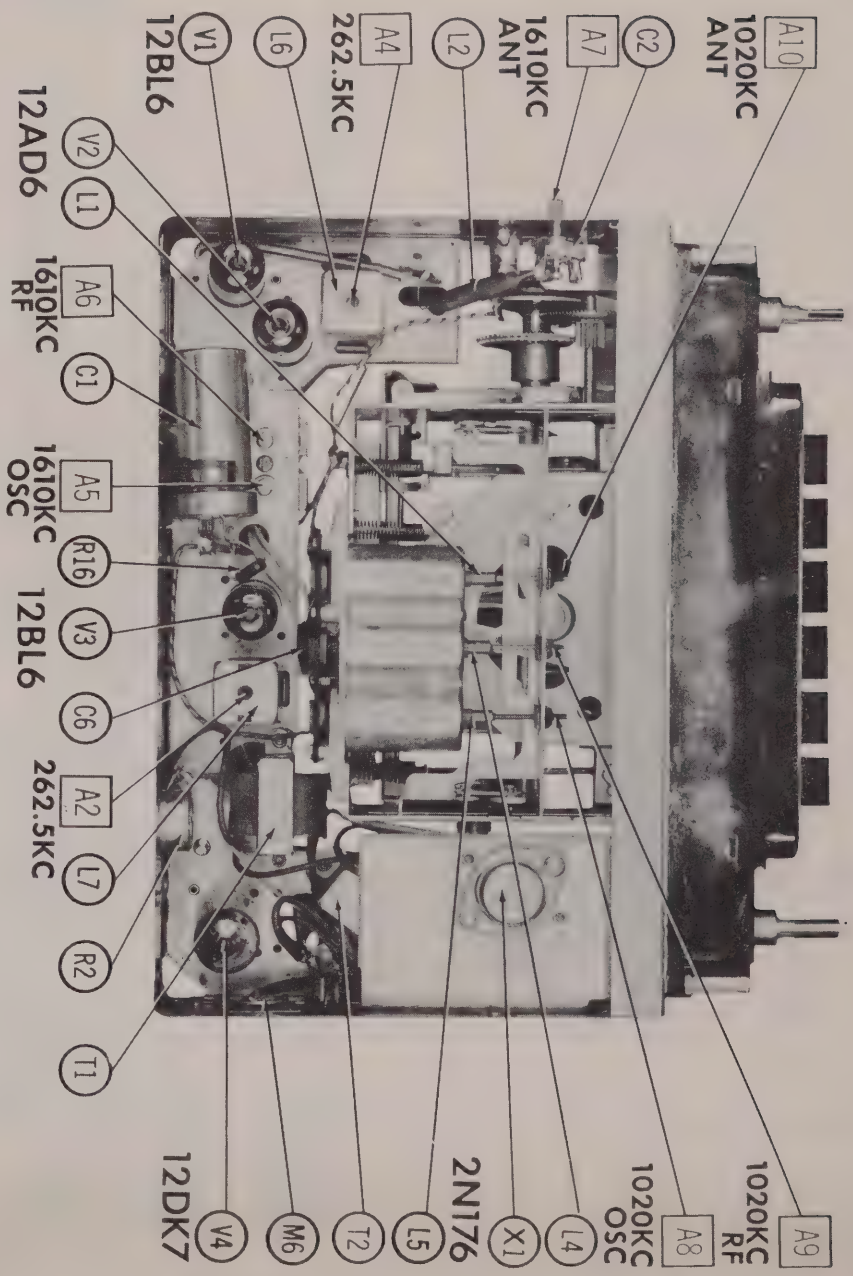
ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R10	47K		6R6048	Note 1
R11	68K		6R6074	
R12	10meg		6R5622	
R13			6K540634	Note 2
R14	.47Ω		17K488266	
R15	5.6Ω		17K739323	
R16	100Ω		6R6326	

Note 1. Some versions may use 330K (Part #6R2096) in this application.
Note 2. Temperature compensating unit, 10Ω ⓐ 25° C.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	15 :	1	25C560231 ①						① Alt. part #25K560162.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7Ω tap ⓐ 6.8Ω tap ⓐ 3-4Ω		25C560156							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5" x 7"	PM	3-4Ω	50D560146 ①	57A21	① Includes plug only.
	5" x 7"	PM	3-4Ω	50D560147 ②		② Includes plug and receptacle

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	24C536308					Note 1
L2	RF Choke	24K539955					Includes 27mmf Cap.
L3	IF Trap Coil	24K539616	19-3125	TV-195	6153	VP-4	133 Microhenries
L4	RF Coil	24C536308					Note 1
L5	Osc. Coil	24B536300					Note 1
L6	Input IF	24K560419	16-6752	BC-350	12-H2	RF-3	
	Input IF	24K537792 *	16-6752	BC-350	12-H2	RF-3	*Alternate part number.
L7	Output IF	24K560102					
	Output IF	24B542371 *					*Alternate part number.

Note 1. Part of Tuner (M4).

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L8	1.8A	.3Ω	4 MH.	25C560440 ①					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MOTOROLA PART No. FUSE	MOTOROLA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	AGA 5	5A	65R122345	9K560411	301005.	155004	AGA 5	HIF

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Dial Lamp		#44 (Alternate type #47, part #65R10867)
M3	Dial Lamp		#44 (Alternate type #47, part #65R10867)
M4	Tuner	77E542307	(AT-234) Complete. (Includes coils L1, L4, L5 and Mounting Plate Assy. part #1V536078)
M5	Switch	40B534023	On-off (SPST)
M6	Spark Plate	48A539147	Selenium (Alternate Part #48K539953)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36B560158	Tone & dummy
Knob	1V560741	Tuning & volume
Dial Scale	34B560043	
Pushbutton	38K560032	Off
Pushbutton	38K560553	Station

WIRING DATA

General-use Shielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

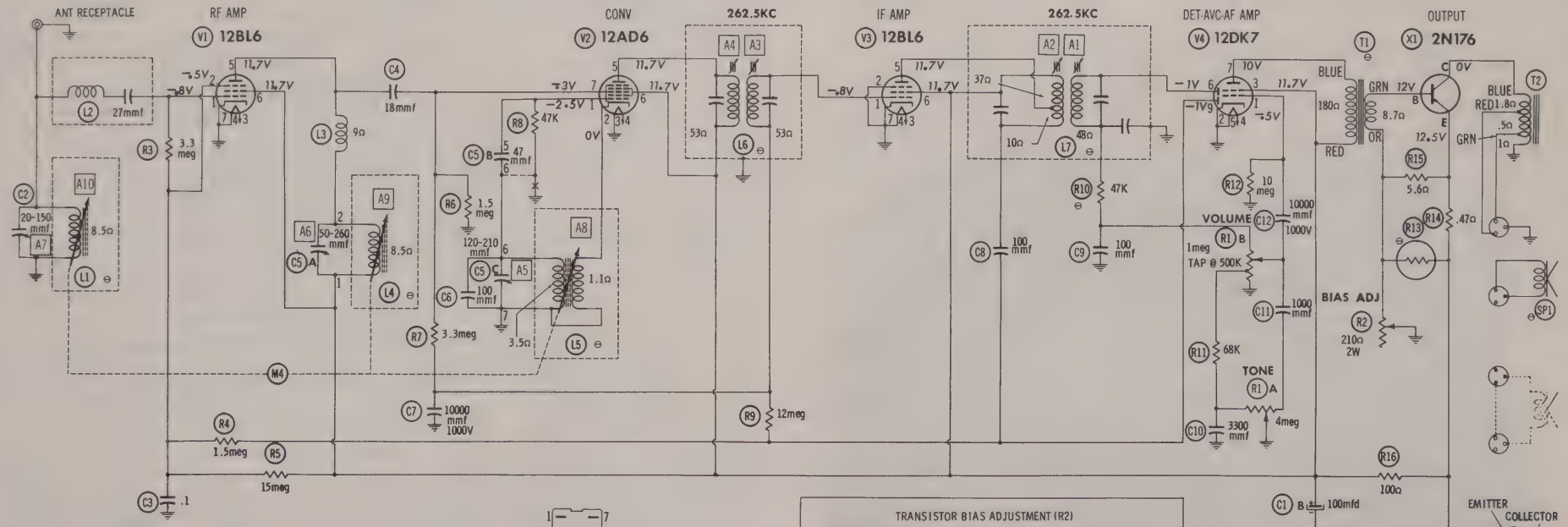
CHASSIS—BOTTOM VIEW

SET 394 FOLDER 6

FOLDER 6

AMERICA MOTORS MODEL 8990494

AMERICA MOTORS MODEL 8990494



TRANSISTOR BIAS ADJUSTMENT (R2)

The bias adjustment should be checked after a transistor is replaced. Turn the bias control fully counterclockwise. Apply power to the receiver and allow a 15 minute warm-up period. Connect the positive lead of a low-range VTVM to the junction of T2 and X1. Connect the negative lead to chassis. Adjust R2 for a meter reading of .98 volts. (This is equivalent to ecollector current of 420MA).

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	11meg	8meg	1.3Ω	0Ω	†120Ω	†100Ω	0Ω		
V2	12AD6	47K	1.1Ω	0Ω	1.3Ω	†150Ω	†100Ω	1.3meg		
V3	12BL6	4meg	0Ω	1.3Ω	0Ω	†140Ω	†100Ω	0Ω		
V4	12DK7	10meg	0Ω	†100Ω	1.3Ω	0Ω	1meg	†280Ω	NC	6meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

† MEASURED FROM POSITIVE TERMINAL OF C1A.

NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ARVIN MODELS 8571, 8572, 8573 (Ch. 1.41100, 1.41300)

ARVIN MODELS 8571, 8572, 8573 (Ch. 1.41100, 1.41300)

ARVIN MODELS 8571, 8572, 8573 (Ch. 1.41100, 1.41300)

TRADE NAME	Arvin Models 8571, 8573 (Ch. 1.41100), 8572 (Ch. 1.41300)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det. - AVC - AF Amp., 3V4 Output
POWER SUPPLY RATING	110-120 Volts AC-DC (or) 7.5 Volts "A" Supply & 90 Volts "B" Supply .11 Amp. @ 117 Volts AC (or) 50MA @ 7.5 Volts DC & 14MA @ 90 Volts DC (10 Watts)
TUNING RANGE—BROADCAST	540-1670KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	"	A6	"

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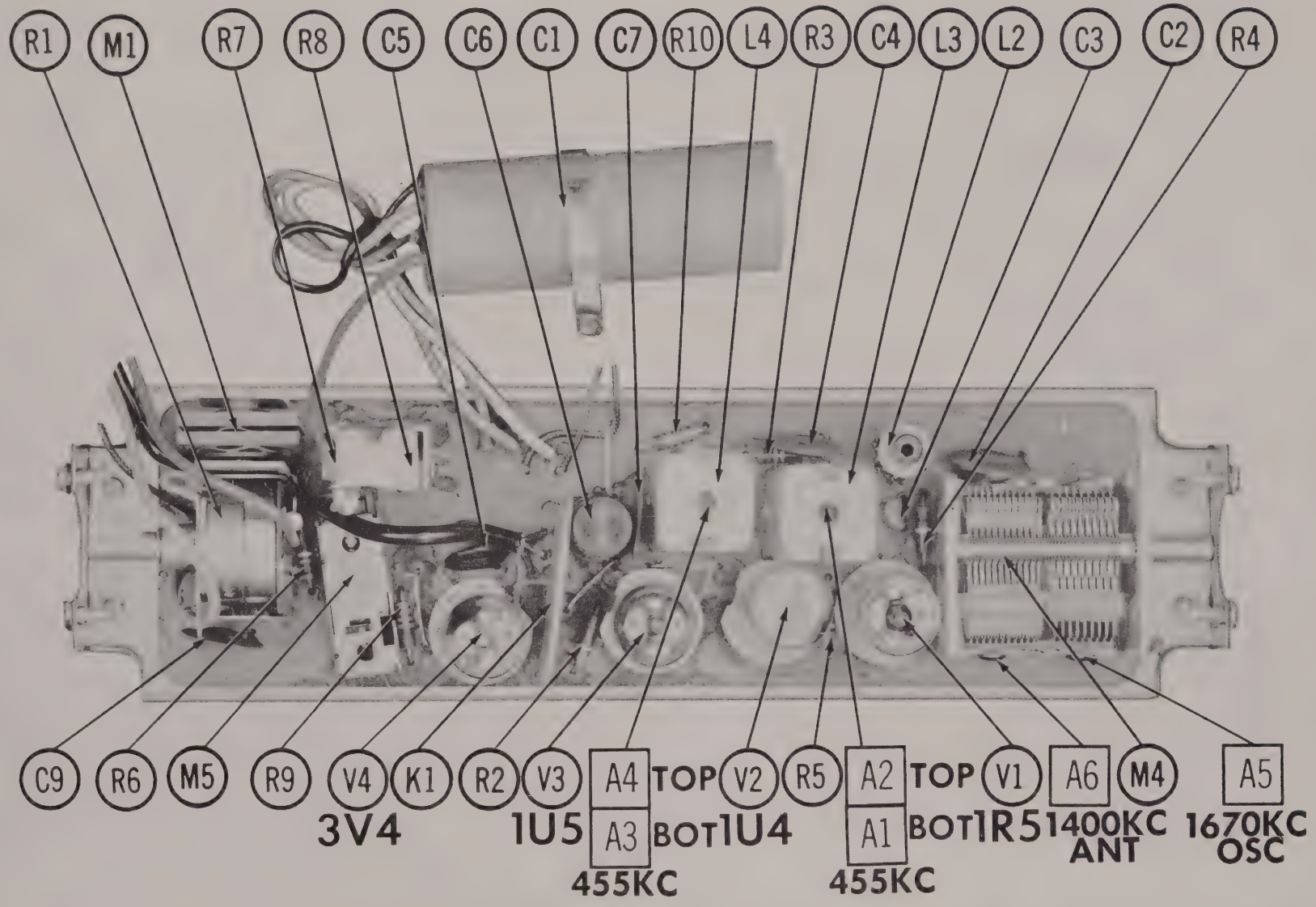


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. - AVC - AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	44439						R2546 *
B	40	150							
C	20	150							
D	200	10							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C3	47			BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	
C4	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C5	3300			BPD-0033	DD-332	BYA10D33	ED-0033	UC-5233	5GA-D33	
C6	.1	200				BC2P1J		ACE401	2SE-P10	
C7	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C8	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C9	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	44446					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ARVIN PART No.	NOTES
R2	3.3meg			
R3	12K			
R4	100K			
R5	390Ω			
R6	820Ω			

ITEM No.	RATING OHMS	RATING WATT	ARVIN PART No.	NOTES
R7	1000Ω	5	44448-1	
R8	1000Ω	5	44448-1	
R9	270Ω			
R10	680Ω			
R11	150Ω		44814	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	7700Ω	3-4Ω	42026-4	Z1110	A-2927①		A-3329	24S49	S-8X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	44888 ①	4A07	① Used in Chassis L 41100
	4"	PM	3-4Ω	43096 ②		② Used in Chassis L 41300

PARTS LIST AND DESCRIPTIONS (Continued)
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ARVIN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	44938-67					Includes handle assembly Model 8573
	Loop Stick	44471-29					Includes handle assembly Model 8571
	Loop Stick	44921-1					Includes mounting ass'ly Model 8572
L2	Osc. Coil	43644-4					Model 8573 and 8571
	Osc. Coil	44644-2					Model 8572
L3	Input IF	44837-1					
L4	Output IF	44837-2					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	10000mmf, 5000mmf, 100mmf, 150mmf, 2000mmf, 4.7meg, 1meg, 1meg, 10meg	43743-5	Sprague DP-1

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ARVIN PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.061A	44465-2 ①	1002A ①	RS065 ①	65U ① M150 ②	① Selenium Type ② Silicon Type

BATTERIES

ITEM No.	VOLTAGE	ARVIN PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	RAY-O-VAC "A"	RAY-O-VAC "B"	NOTES
M2	90V			P60		479		M214		214	
M3	7½V		C5		717		M9		9		

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M4	Tuning Cap	44449-1	2 Gang (Ant. 20-325mmf) (Chassis L 4100)
	Tuning Cap	44449-2	2 Gang (Chassis L 41300)
M5	Switch	44450	AC-Battery (Slide Type)

CABINETS & CABINET PARTS

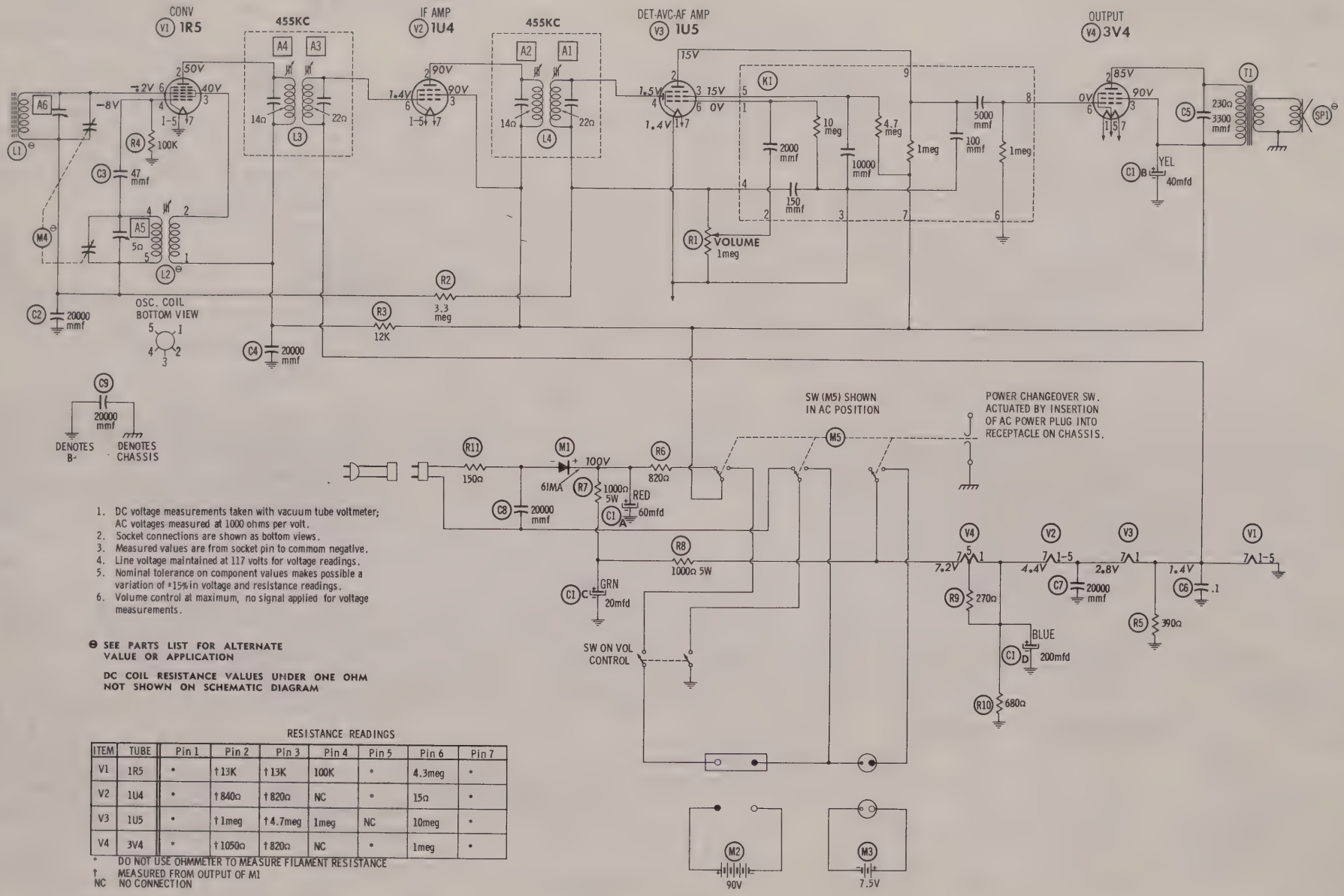
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	44595-67	Tuning (Models 8573, 8572, White)
Knob	44595-29	Tuning (Model 8571, Black)
Knob	44594-67	On-Off-Volume (Models 8573, 8572, White)
Knob	44594-29	On-Off-Volume (Model 8571, Black)
Cabinet Front	45068-63	(Model 8573, Red)
Cabinet Front	45068-35	(Model 8573, Turquoise)
Cabinet Back	44936-63	(Model 8573, Red)
Cabinet Back	44936-35	(Model 8573, Turquoise)
Cabinet Front	45068-39	(Model 8571, Gray)
Cabinet Back	44477-39	(Model 8571, Gray)
Cabinet	44773-56	(Model 8572, Green)
Cabinet	44773-128	(Model 8572, Tan)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	•	†13K	†13K	100K	•	4.3meg	•
V2	1U4	•	†840Ω	†820Ω	NC	•	15Ω	•
V3	1U5	•	†1meg	†4.7meg	1meg	NC	10meg	•
V4	3V4	•	†1050Ω	†820Ω	NC	•	1meg	•

• DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION

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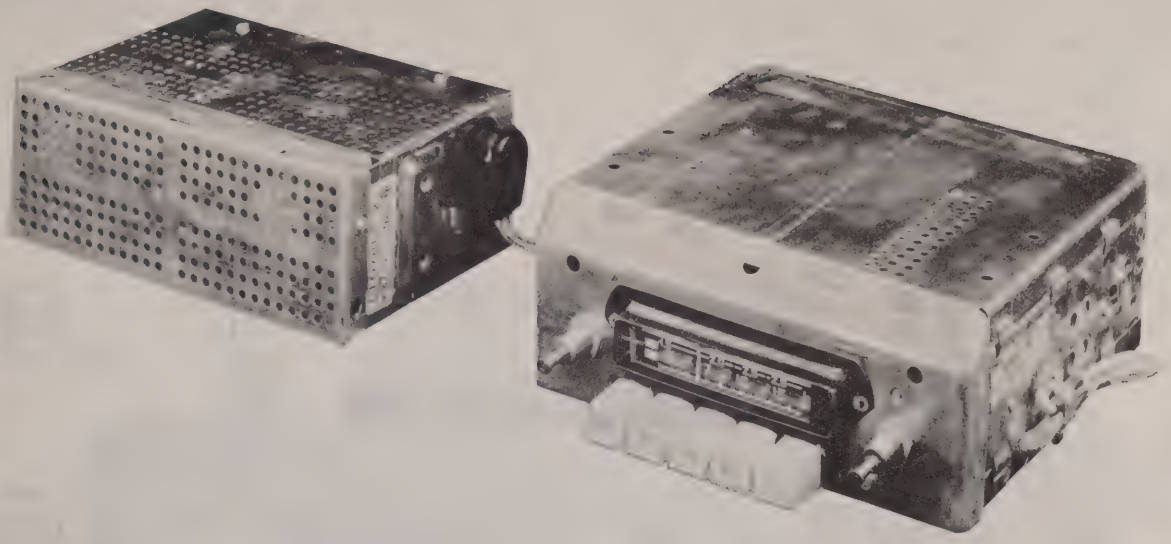
BLAUPUNKT
MODEL Hamburg

BLAUPUNKT
MODEL Hamburg



TRADE NAME	Blaupunkt Model Hamburg
SUPPLIER	Robert Bosch Corp., 40-25 Crescent St., Long Island City, N.Y.
TYPE SET	Battery Operated Universal AM Automobile Receiver
TUBES (Five)	Types EF89 RF Amplifier, 6AJ8/ECH81 Mixer-Osc., EF89 IF Amplifier, EBF89 Det.-AVC-AF Amp. 6BQ5/EL84 Output
POWER SUPPLY	12 Volt Storage Battery (12 Volt Versions) RATING 3 Amp@12.6 Volts DC 6 Volt Storage Battery (6 Volt Versions) 6 Amp@6.3 Volts DC
TUNING RANGE—BROADCAST	540-1610KC LONG WAVE 150-300KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 2 (grid) of 6AJ8/ECH81 (V2). Low side to chassis.	460KC (400~ Mod)	BC	550KC	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.	Fig. 1.	Thru Dummy to antenna receptacle.	1610KC	"	Tuning gang fully open	"	A5, A6	"
3.	"	"	1400KC	"	1400KC	"	A7	"
4.	"	"	600KC	"	600KC	"	A8, A9	"
5.	"	"	1400KC	"	1400KC	"	A10,	"
6.	"	"	200KC	LW	200KC		A11, A12 A13	"

With radio installed in car and antenna fully extended, tune in a weak station near 600KC and adjust A7 for maximum output.

PUSHBUTTON ADJUSTMENT

1. Allow receiver to warm up.
2. Pull pushbutton out.
3. Tune manually to desired station
4. Press pushbutton in firmly.

("M" buttons for standard broadcast, "L" button for long wave)

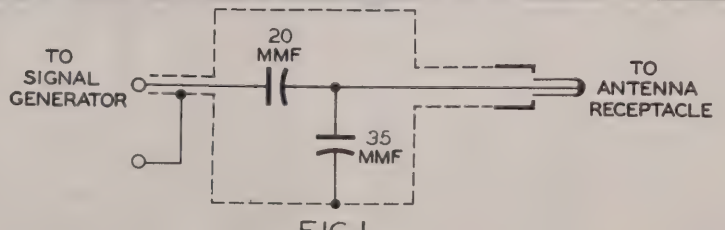


FIG. 1

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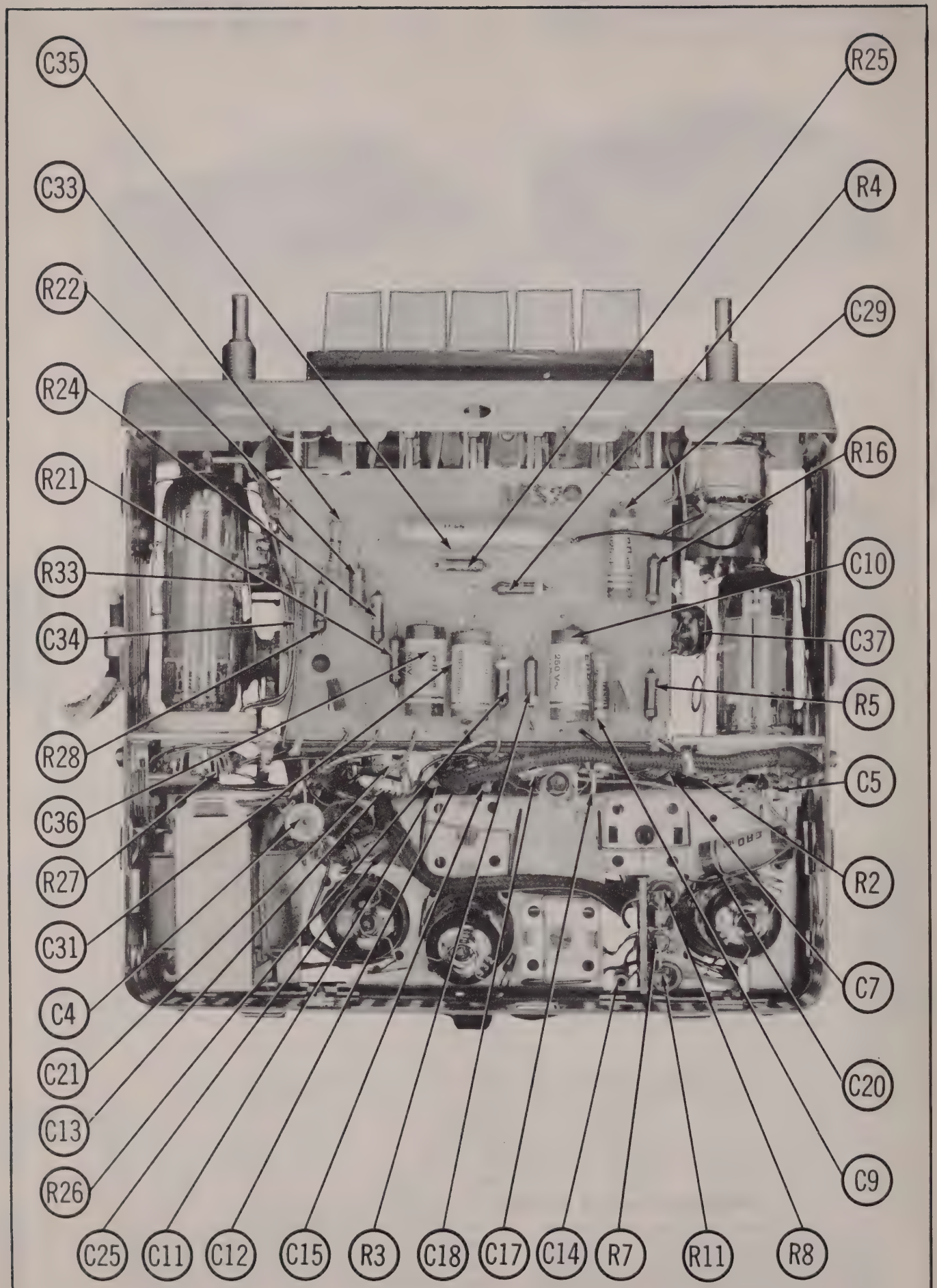
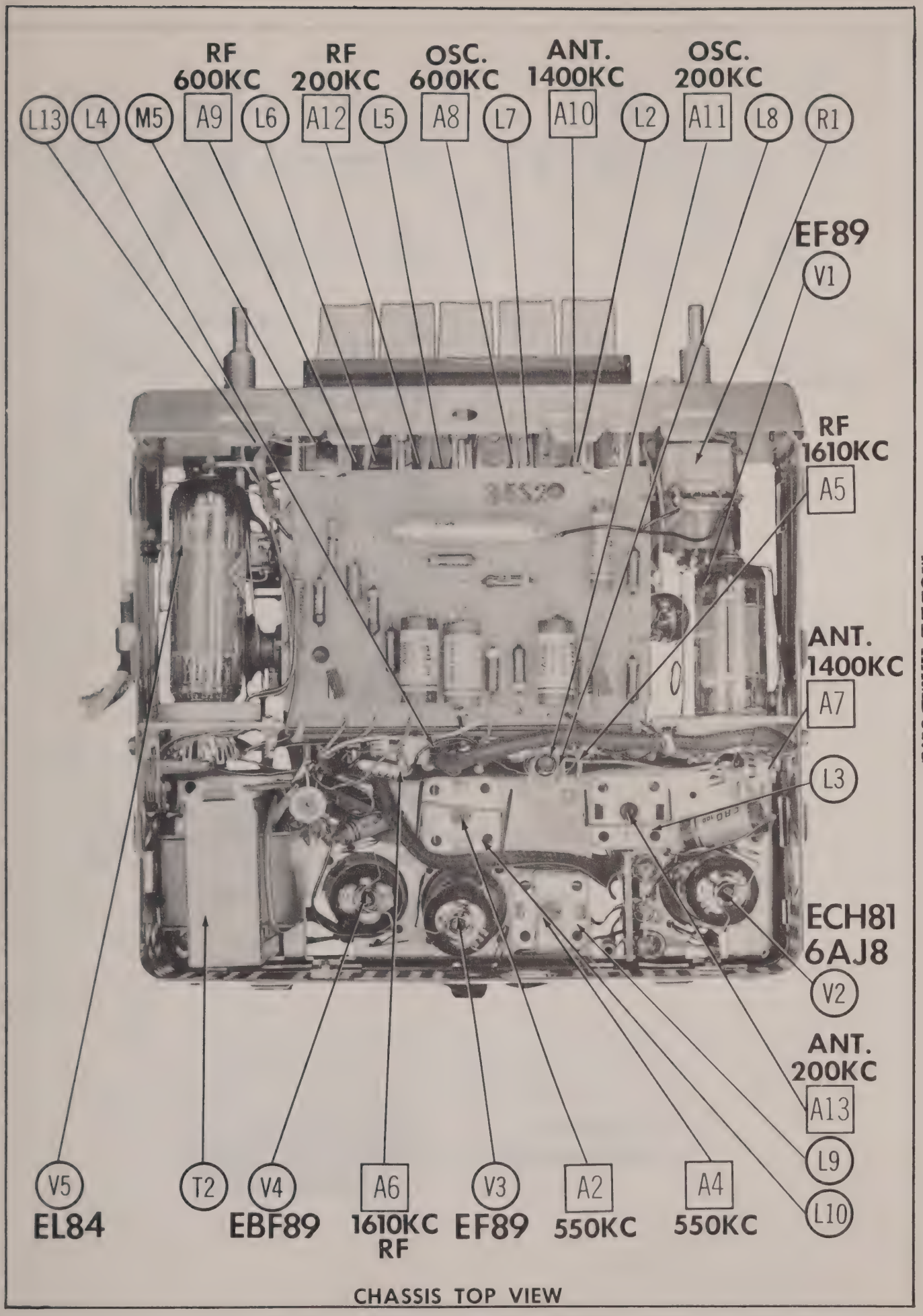
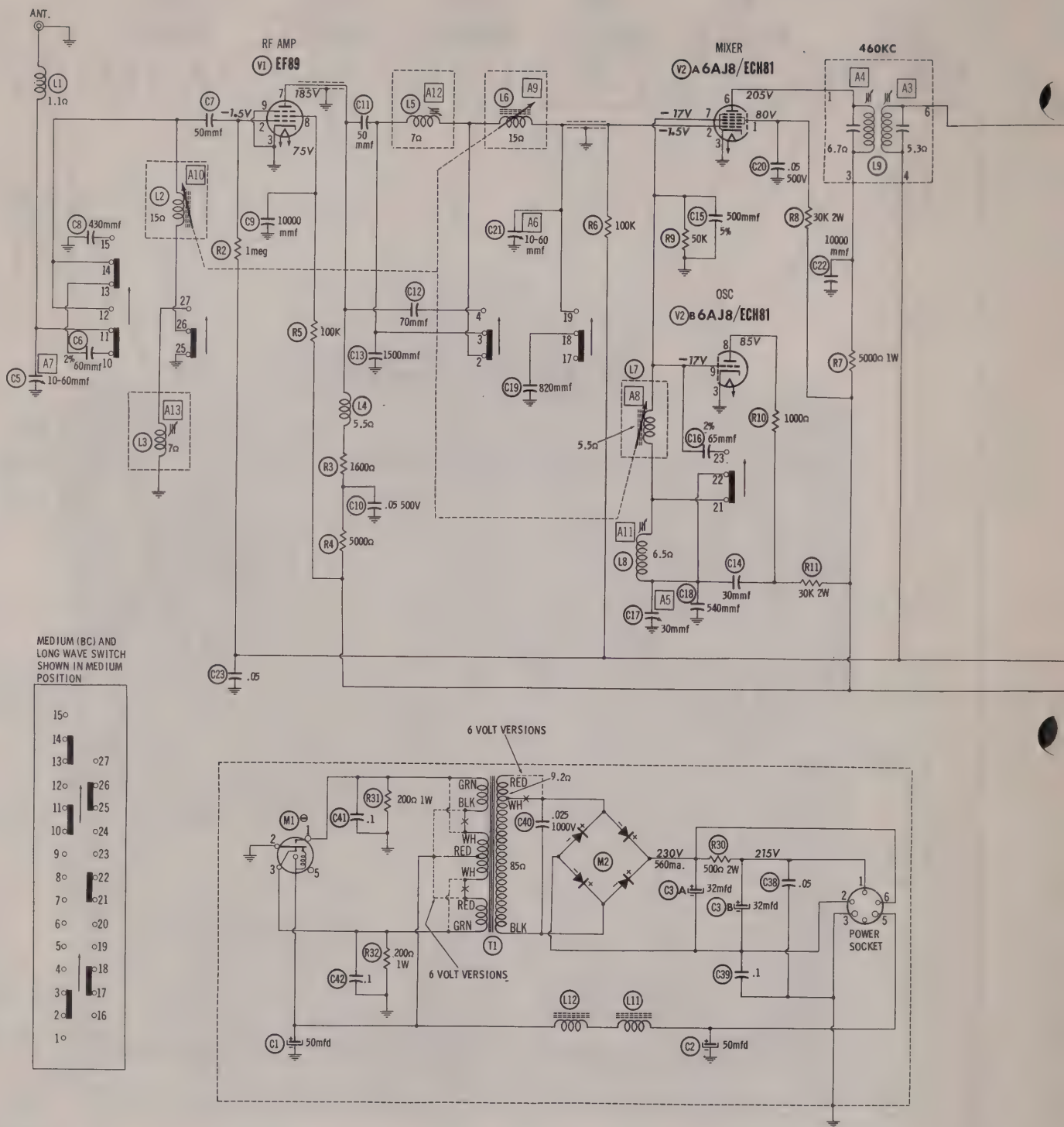
SET 394 FOLDER 8



CHASSIS TOP VIEW



CHASSIS TOP VIEW

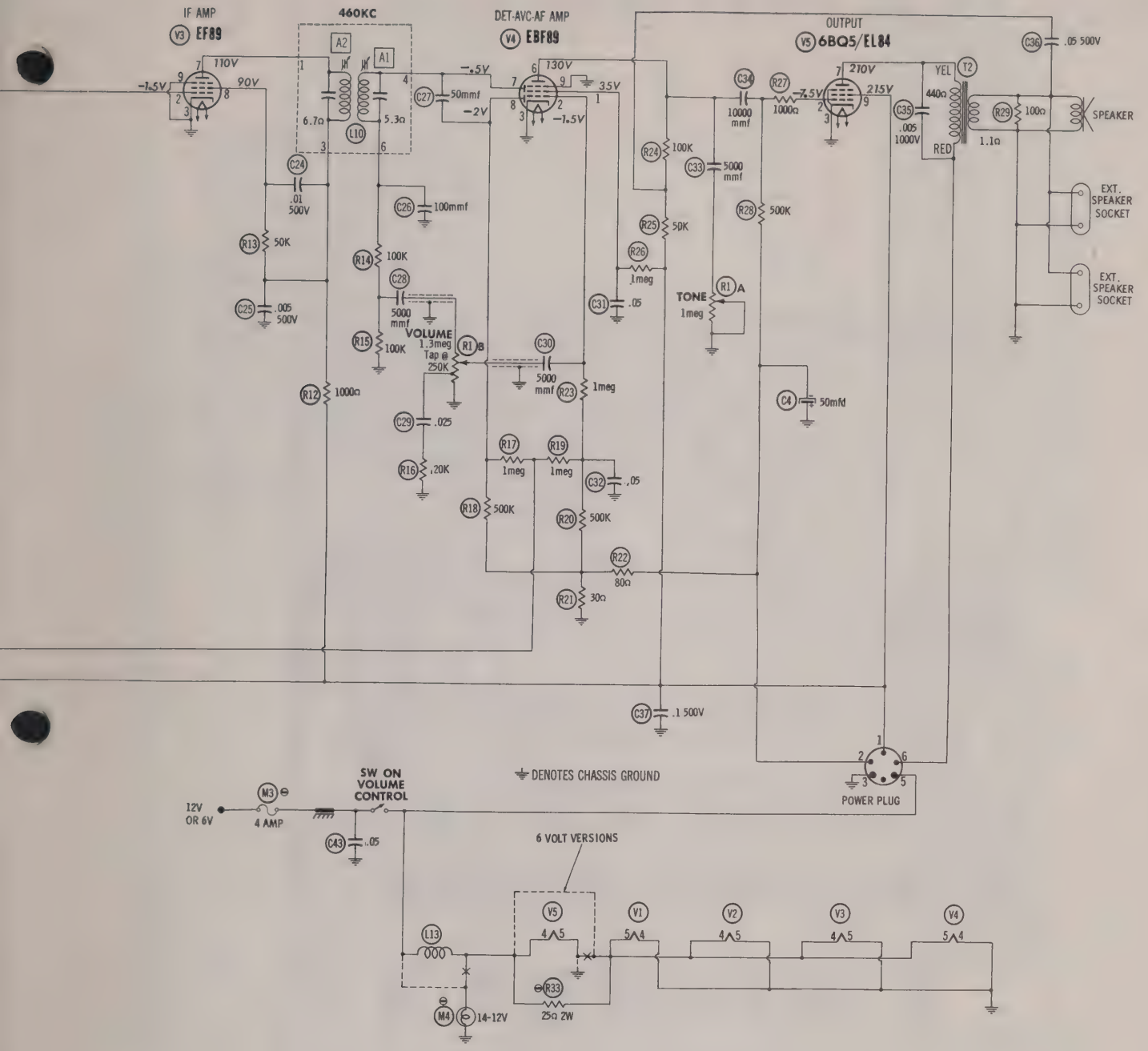


Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

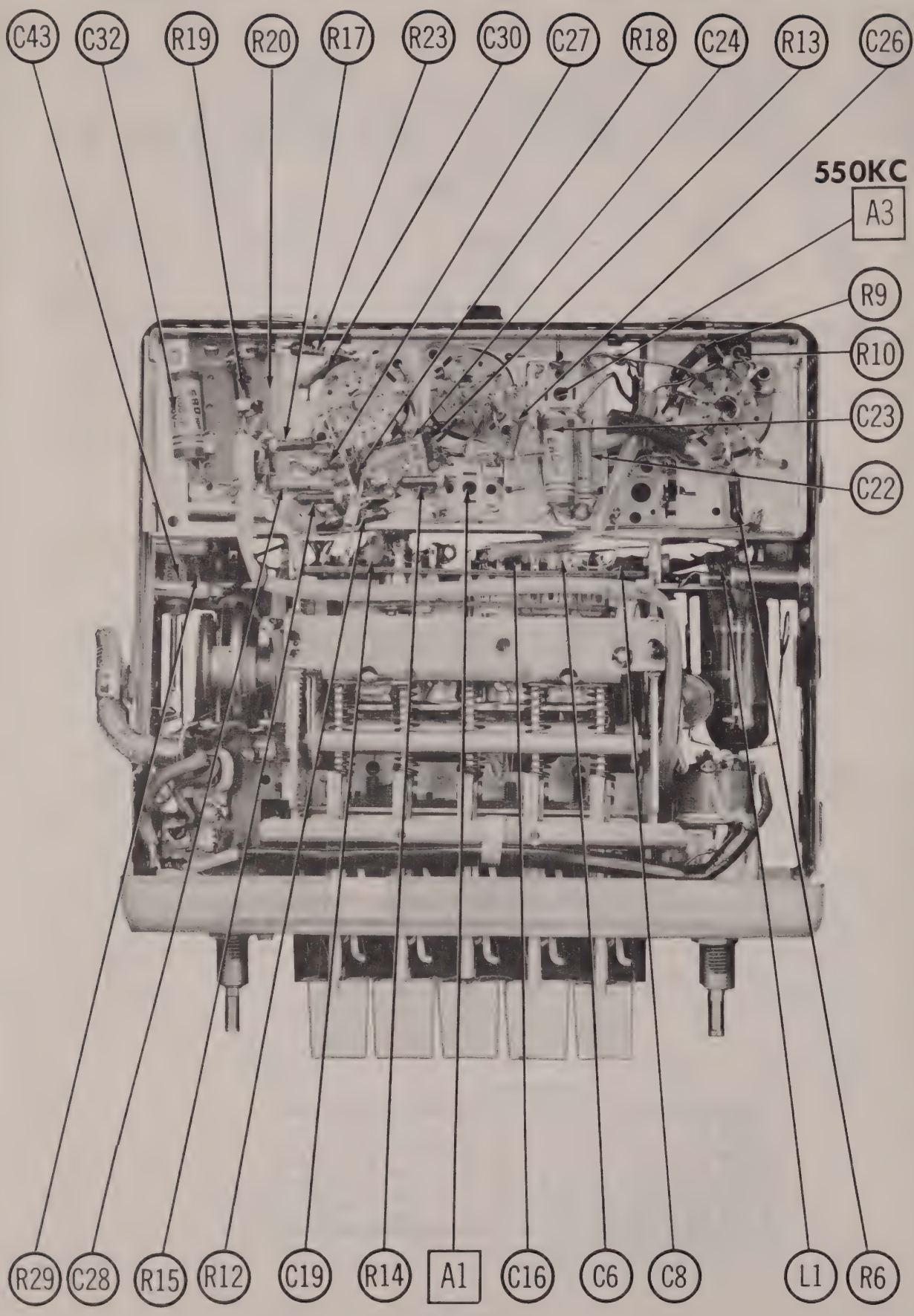


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF89	0Ω	1.7meg	0Ω	0Ω	1Ω	0Ω	†7100Ω	†100K	0Ω
V2	ECH81 6AJ8	†30K	830K	0Ω	1Ω	0Ω	†5500Ω	50K	†31K	50K
V3	EF89	0Ω	730K	0Ω	1Ω	0Ω	0Ω	†1500Ω	†51K	0Ω
V4	EBF89	†1meg	1.4meg	0Ω	0Ω	1Ω	†150K	200K	420K	0Ω
V5	EL84 6BQ5	NC	500K	0Ω	1Ω	2.2Ω	NC	†440Ω	0Ω	†500Ω

† MEASURED FROM OUTPUT OF M2
NC NO CONNECTION

394-8



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	RF Amplifier	EF89
V2	Mixer-Oscillator	6AJ8/ECH81
V3	IF Amplifier	EF89
V4	Det.-AVC-AF Amp.	EBF89
V5	Output	6BQ5/EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	50	18		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C2	50	18		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C3A	32	385		PRS450V3030			TDLD-29	MTD-4530	TVA-2735
B	32	385							
C4	50	15		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206

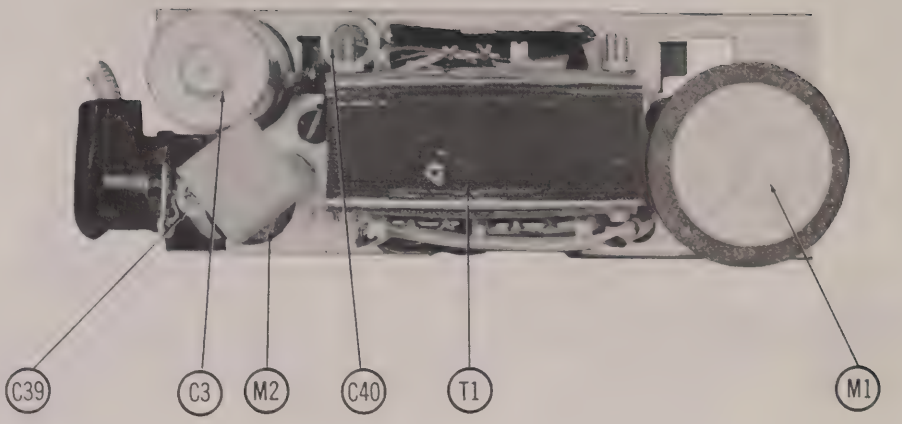
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

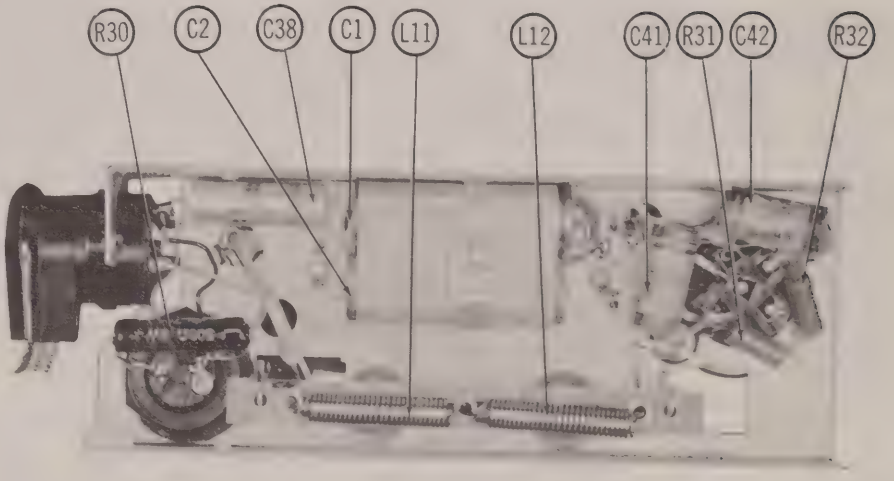
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BLAUPUNKT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	10-60									
C6	60									2%
C7	50			S150	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	
C8	430									
C9	10000			S110000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C10	.05	500		P688N-05	DF-503	CUB6S5		GEM-615	6TM-S5	
C11	50			S150	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	
C12	70									
C13	1500			1467-0015	D6-152	1W5D15	ED-1500	MC256	1FM215	
C14	30			S130	D6-300	LT6Q3	GP-30	UC-543	5GA-Q3	
C15	500					5R5T5	ED-500	MCE-245	MS35	5%
C16	65									2%
C17	30			S130	D6-300	LT6Q3	GP-30	UC-543	5GA-Q3	
C18	540									
C19	820									
C20	.05	500		P688N-05	DF-503	CUB6S5		GEM-615	6TM-S5	
C21	10-60									
C22	10000			S110000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C23	.05	250		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C24	.01	500		P688N-01	D6-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C25	.005	500		P688N-005	D6-502	CUB6D5	GP-5000	GEM-625	6TM-D5	
C26	100			S1100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C27	50			S150	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	
C28	5000			S15000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C29	.025	250		P488N-025		CUB6S22		GEM-4125	6TM-S22	
C30	5000			S15000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C31	.05	500		P688N-05	DF-503	CUB6S5		GEM-615	6TM-S5	
C32	.05	250		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C33	5000			S15000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C34	10000			S110000	D6-103	LT6S1	GP-10000	DC511	5HK-S1	
C35	.005	1000		P1088N-005		CUB10D5		GEM-1025	10TM-D5	
C36	.05	500		P688N-05	DF-503	CUB6S5		GEM-615	6TM-S5	
C37	.1	500		P688N-01	DF-104	CUB6P1		GEM-601	6TM-P1	
C38	.05	350		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C39	.1	125		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C40	.025	1000		P1088N-025		CUB10S22		GEM-10125	10TM-S22	
C41	.1	125		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C42	.1	125		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C43	05	250		P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg							Tone
B	1 3meg							Volume Tap@250K
C	Switch							Power On-Off



POWER CHASSIS-TOP VIEW



POWER CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	BLAUPUNKT PART No.	NOTES
R2	1meg			
R3	1600Ω			
R4	5000Ω			
R5	100K			
R6	100K			
R7	5000Ω	1		
R8	30K	2		
R9	50K			
R10	1000Ω			
R11	30K	2		
R12	1000Ω			
R13	50K			
R14	100K			
R15	100K			
R16	20K			
R17	1meg			
R18	500K			
R19	1meg			
R20	500K			
R21	30Ω			
R22	80Ω			
R23	1meg			
R24	100K			
R25	50K			
R26	1meg			
R27	1000Ω			
R28	500K			
R29	100Ω			
R30	500Ω	2		
R31	200Ω	1		
R32	200Ω	1		
R33	25Ω	2		Note 1

Note 1. Shorted in 6 Volt versions.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA BLAUPUNKT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6V @1A	240V @ 056A		TF722/10Z						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA BLAUPUNKT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	30:	1	TF27/52						

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BLAUPUNKT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Loading		19-1005	BC-566	4612		9.5 Microhenries
L2	Ant. Coil						
L3	Ant. Coil						
L4	RF Choke						
L5	RF Coil						
L6	RF Coil						
L7	Osc. Coil						
L8	Osc. Coil.						
L9	Input IF						
L10	Output IF						
L11	Hash Choke						
L12	Hash Choke						
L13	Fil. Choke						

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA BLAUPUNKT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M2	.056A	XZ737/2xL				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA BLAUPUNKT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interrupter	12.6V	115v	SM702/2Z①				①12.6 Volt Versions
	Interrupter	6.3V	115v	SM702/1Z②				② 6.3 Volt Versions

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA BLAUPUNKT PART No. FUSE	BLAUPUNKT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3		4A①						

① 6 Volt Versions Use 8A

MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M4	Dial Lamp		14-12V .1A (6-8V.1A for 6Volt Versions.)

WIRING DATA

General-use Shielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

DIAL LAMP REPLACEMENT

Tune the receiver to the low frequency end of the dial. Press the dial scale latch spring (located on the right of the scale frame) to the left. Remove the dial scale. Remove lamp socket by lifting up with a screwdriver.

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CHALLENGER
MODEL CHA-20/Y

CHALLENGER
MODEL CHA-20/Y

CHALLENGER
MODEL CHA-20/Y

TRADE NAME	Challenger Models CHA20, CHA20Y
MANUFACTURER	Challenger Amplifier Co., P. O. Box 500, Paramus, N. Y.
TYPE SET	AC Operated Phono Amplifier (Model CHA20Y has 3 Speed Manual Record Player)
TUBES (Five)	Types 12AX7 Preamplifier, 12AX7 AF Amp. - Phase Inv., (2) 6V6GT Output, 6AX5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .62 Amp. @ 117 Volts AC (63 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

CHALLENGER
MODEL CHA20

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7	
V2	AF Amp. - Phase Inv.	12AX7	
V3	Output	6V6GT	
V4	Output	6V6GT	
V5	Rectifier	6AX5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Challenger PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	16	500		AFH2-69	B0500		TMD-61	D-270	
C2A	■5	450		AFH4-09	D0080	WP433. 6	TMQ-9		TVL-4759. 7
B	▲5	450							
C	5	450							
D	▲5	450							
C3	50	50		PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Challenger PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.033	400		P488N-033	DF-303	CUB4S33		GEM-4133	4TM-S33	
C5	.033	400		P488N-033	DF-303	CUB4S33		GEM-4133	4TM-S33	
C6	15000			BPD-015	DD16-153	BYA10S15	ED-015	GEM-6115	5HK-S15	
C7	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C8	270				D6-271	L10T27	ED-270		MS-327	10%
C9	2200					1R5D22	CY20C222K		MS-222	10%
C10	1000					1R5D1	ED-1000	MCB255	MS-21	10%
C11	4700					1R5D47	CY20C472K		MS-247	10%
C12	.033	400		P488N-033	DF-303	CUB4S33		GEM-4133	4TM-S33	
C13	15000			BPD-015	DD16-153	BYA10S15	ED-015	GEM-6115	5HK-S15	
C14	.033	400		P488N-033	DF-303	CUB4S33		GEM-4133	4TM-S33	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Challenger PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Microphone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Phono
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	2meg	½	V413	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	2meg	½	V413	B-76	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

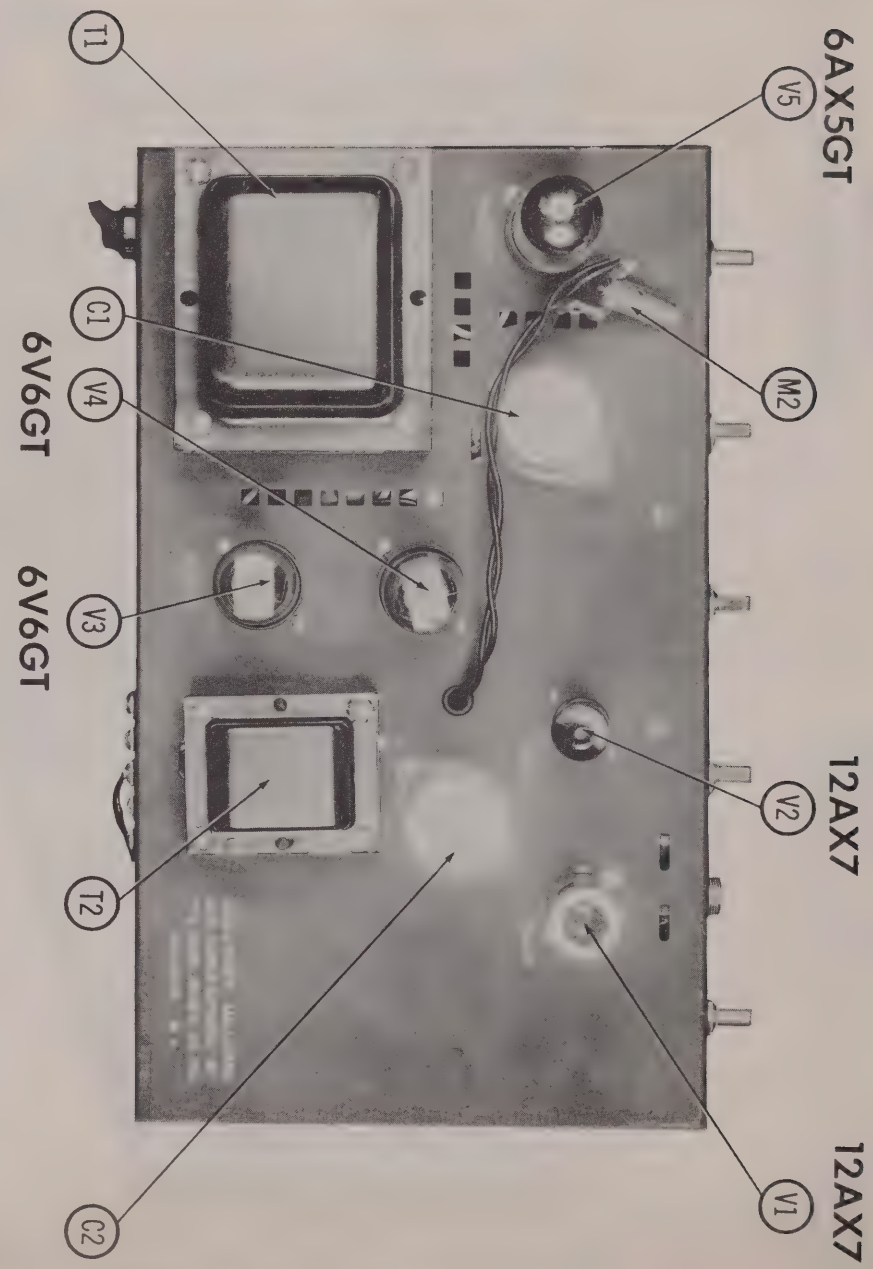
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Challenger PART No.	NOTES
	OHMS	WATT		
R5	3. 3meg			
R6	220K			
R7	470K			
R8	220K			
R9	470K			
R10	220K			
R11	47K			
R12	1500Ω			
R13	220K			

ITEM No.	RATING		Challenger PART No.	NOTES
	OHMS	WATT		
R14	39K			
R15	33K			
R16	100K			
R17	220K			
R18	470Ω			
R19	150K			
R20	100K			
R21	1meg			
R22	220K			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	Challenger PART No.	NOTES
R23	22K			
R24	22K			
R25	2200Ω			
R26	330K			
R27	100K			

ITEM No.	RATING OHMS	RATING WATT	Challenger PART No.	NOTES
R28	100Ω	2		
R29	33K	4		Note 1
R30	325Ω	7		
R31	390K			

Note 1. Some versions may use two 68K 2W connected in parallel in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .62A	820VCT @ .070A	6.3VCT @ 2.7A	T3170						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	10K CT	70V Tap @ 16Ω 8Ω, 4Ω	T278							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Challenger PART No. FUSE	Challenger PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	2A 125V S/B			313002. (2A 125V S/B)	342001	MDL2	HKP

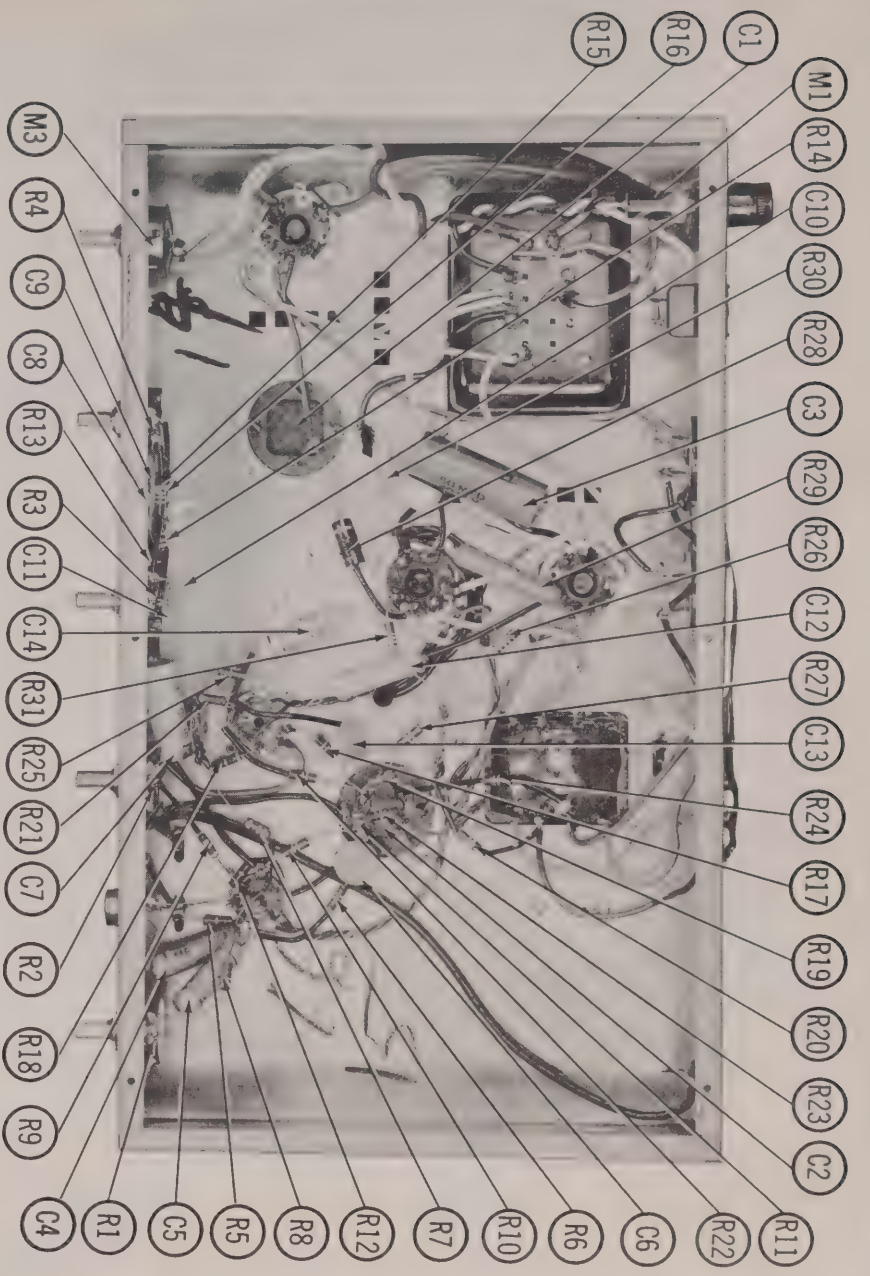
MISCELLANEOUS

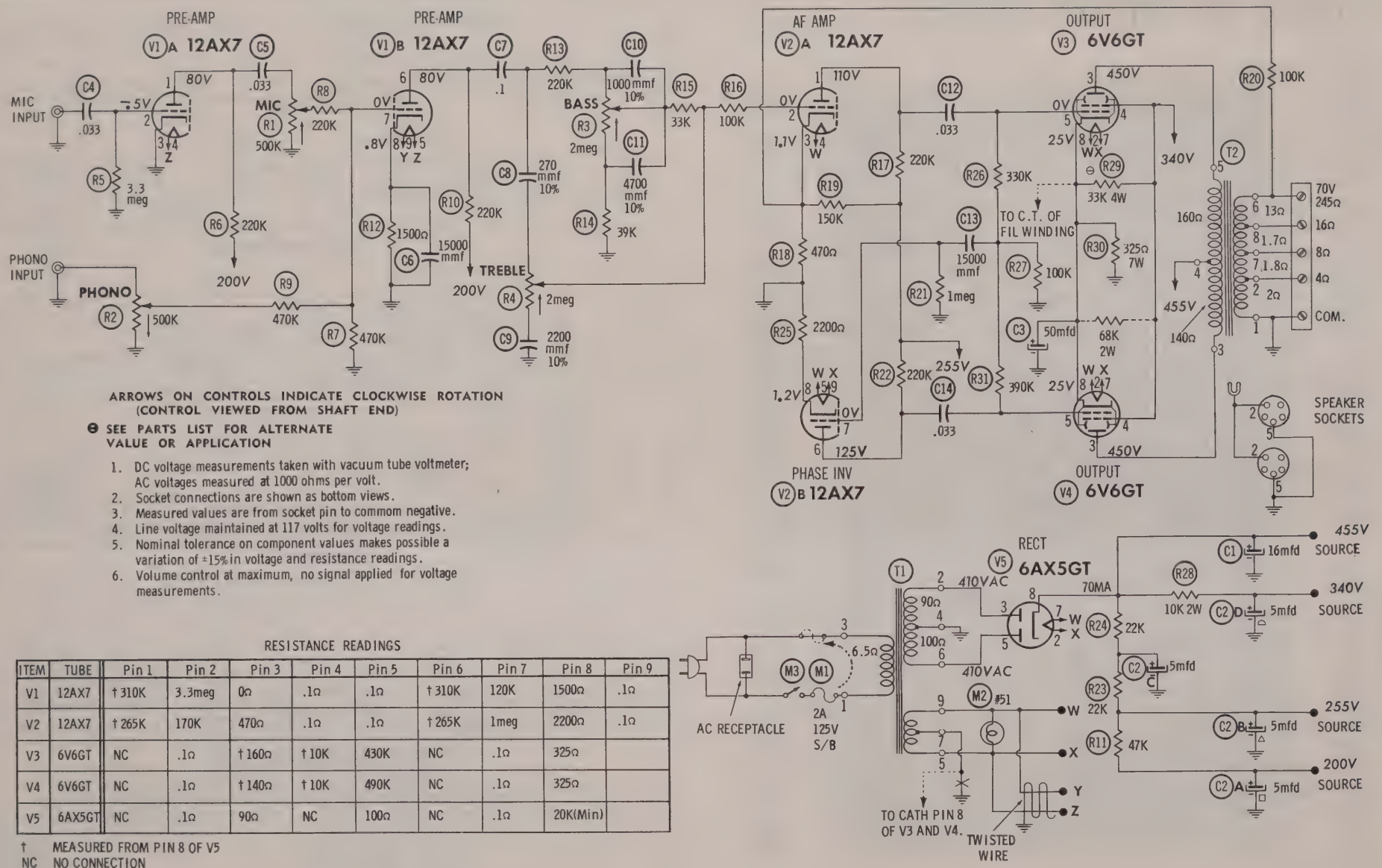
ITEM No.	PART NAME	Challenger PART No.	NOTES
M2	Pilot Lamp		#51
M3	Switch	S434	Power On-Off

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†310K	3.3meg	0Ω	.1Ω	.1Ω	†310K	120K	1500Ω	.1Ω
V2	12AX7	†265K	170K	470Ω	.1Ω	.1Ω	†265K	1meg	2200Ω	.1Ω
V3	6V6GT	NC	.1Ω	†160Ω	†10K	430K	NC	.1Ω	325Ω	
V4	6V6GT	NC	.1Ω	†140Ω	†10K	490K	NC	.1Ω	325Ω	
V5	6AX5GT	NC	.1Ω	90Ω	NC	100Ω	NC	.1Ω	20K(Min)	

† MEASURED FROM PIN 8 OF V5
NC NO CONNECTION

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CORONADO
MODEL RA48-8158A

CORONADO
MODEL RA48-8158A

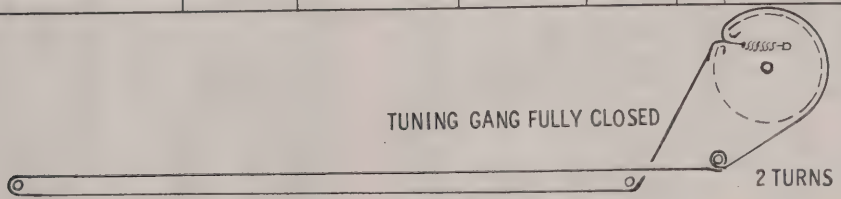
CORONADO
MODEL RA48-8158A

TRADE NAME	Coronado Model RA48-8158A
SUPPLIER	Gamble-Skogmo, Inc., 15N. 8th St., Minneapolis, Minnesota.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC — RATING .27Amp. @ 117 Volts AC (27 Watts)
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1) Low side to B-	456 KC (400~ Mod.)	Tuning gang fully open.	Across Voice Coil	A1, A2 A3, A4,	Adjust for maximum output.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune to 1500KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



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3373

SET 394 FOLDER 10

PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL RA48-8158A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1 A	70	150	150-140	PRS150V8040	BBRT84215	TCT3117	TDLT-7	FMT-339	TVA-3455
B	50	150		20					
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200	152-104	P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C3	.05	200	152-104	P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	10000		158-102	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	270			BPD-00027	DD-271	L10T27	ED-270	UC-5327	5GA-T27	①
C6	5000		158-101	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C7	5000		158-101	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	②
C8	.05	200	152-104	P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C9	.05	400	152-110	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C10	.1	400	152-108	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	

① Some versions may use 220mmf (Part #156-101) in this application.
② Some versions may use .0068mfd (Part #152-128) in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	120-125A	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			AK-8	RS-3/16	NQ	DS-37	
C	Switch			KB-1 or KR-1 *	SWE-12	76-1	US-26	

* Use KR-1 on red label control only.

RESISTORS

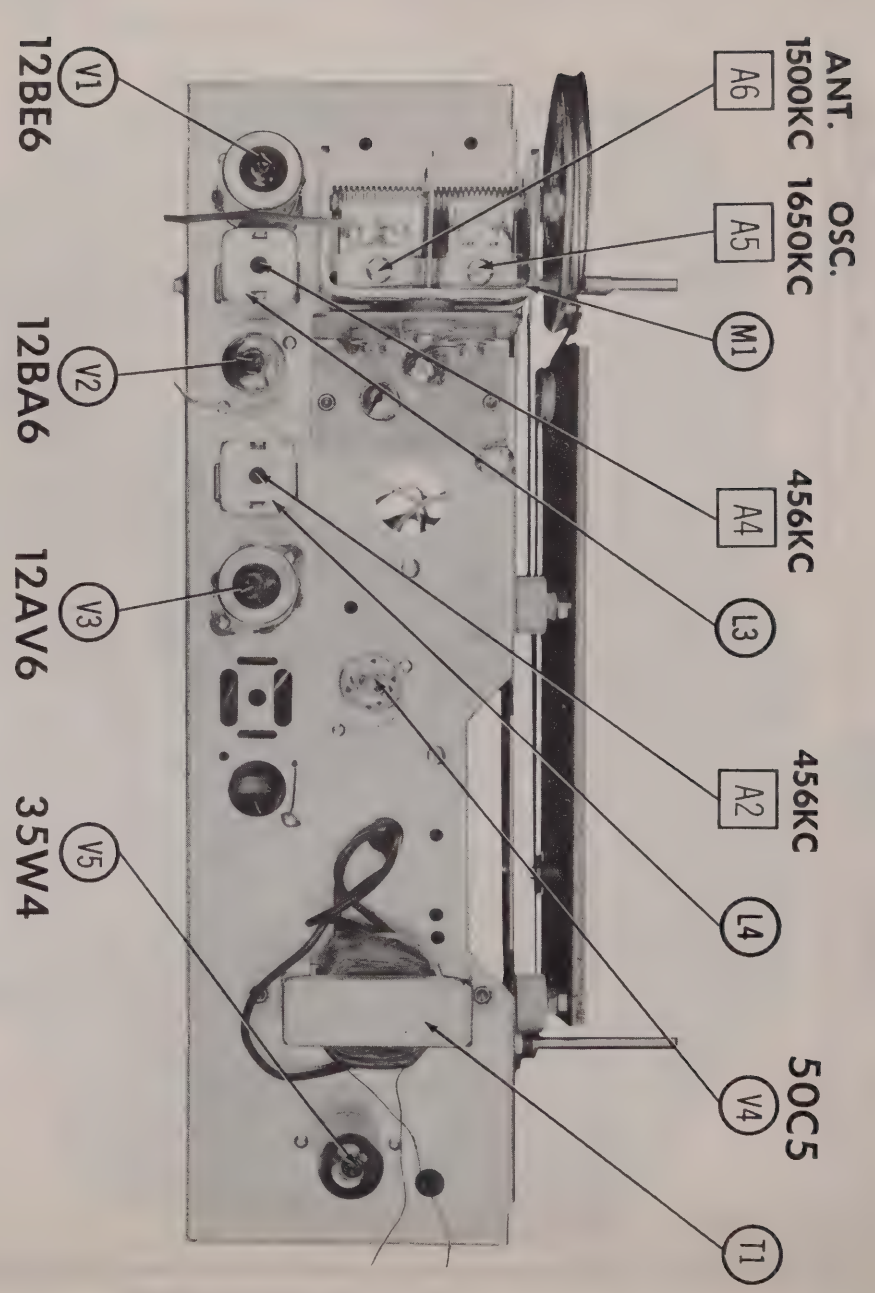
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		CORONADO PART No.	NOTES
	OHMS	WATT		
R2	18K			Note 1
R3	1200Ω			Note 2
R4	82Ω		180-169	
R5	2.2meg		180-107	
R6	680Ω		180-140	
R7	4700Ω		180-183	

ITEM No.	RATING		CORONADO PART No.	NOTES
	OHMS	WATT		
R8	6.8meg		180-135	
R9	2200Ω		180-101	
R10	150Ω		180-111	
R11	15K		180-115	
R12	1500Ω	1	180-157	

Note 1. Some versions may use 22K in this application (Part #180-102)
Note 2. Some versions may use 1000Ω in this application (Part #180-106)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.1	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω	3-4Ω	138-124 ①						①Alternate Part #136-124
	TURNS RATIO PRI.	SEC. 2							
	3.5:	1							

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA CORONADO PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	175-126	6A1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA CORONADO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Ant.	134-109A					Includes cabinet back and line cord.
L2	Osc. Coil	136-131		BC-393 *	69-Osc*		
L3	Input IF	130-114	16-6758	BC-352	12-C1	RF-1	
L4	Output	130-114	16-6758	BC-353	12-C2	RF-2	

* Drill New Mounting Hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	5000mmf, 250mmf, 270K, 470K	166-109	Aerovox	PA-112-2
				Centralab	PC-71
				Cornell-Dubilier	112TM2
				Erie	1406-02
				Sprague	T-4

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	Tuning Cap.	160-123A	2 Gang (Ant. 26-470mmf, Osc. 19-125mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

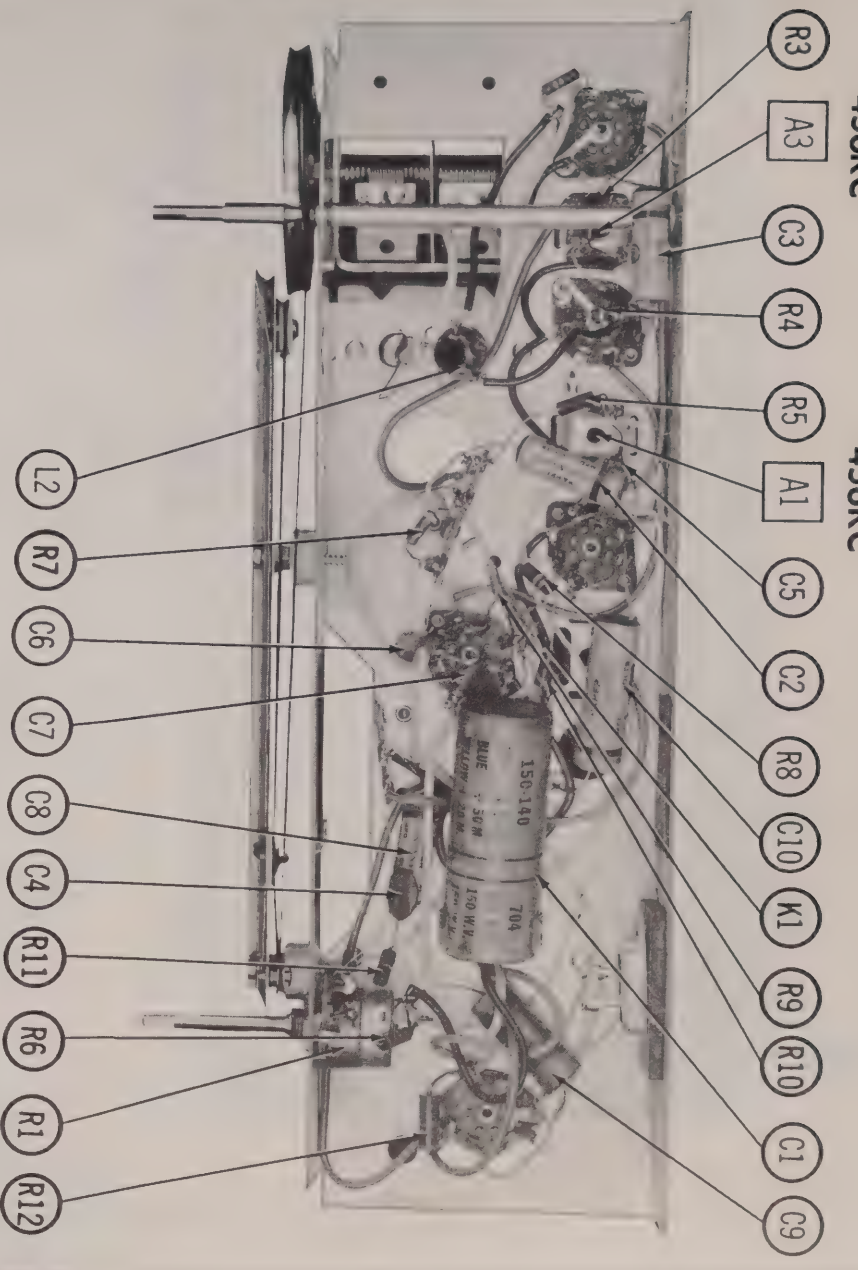
NAME	PART NO.	DESCRIPTION
Knob	220-131B	On-Off-Volume and Tuning
Cabinet	210-139	Mist Green
Dial Scale	215-137A	
Dial Pointer	140-131	

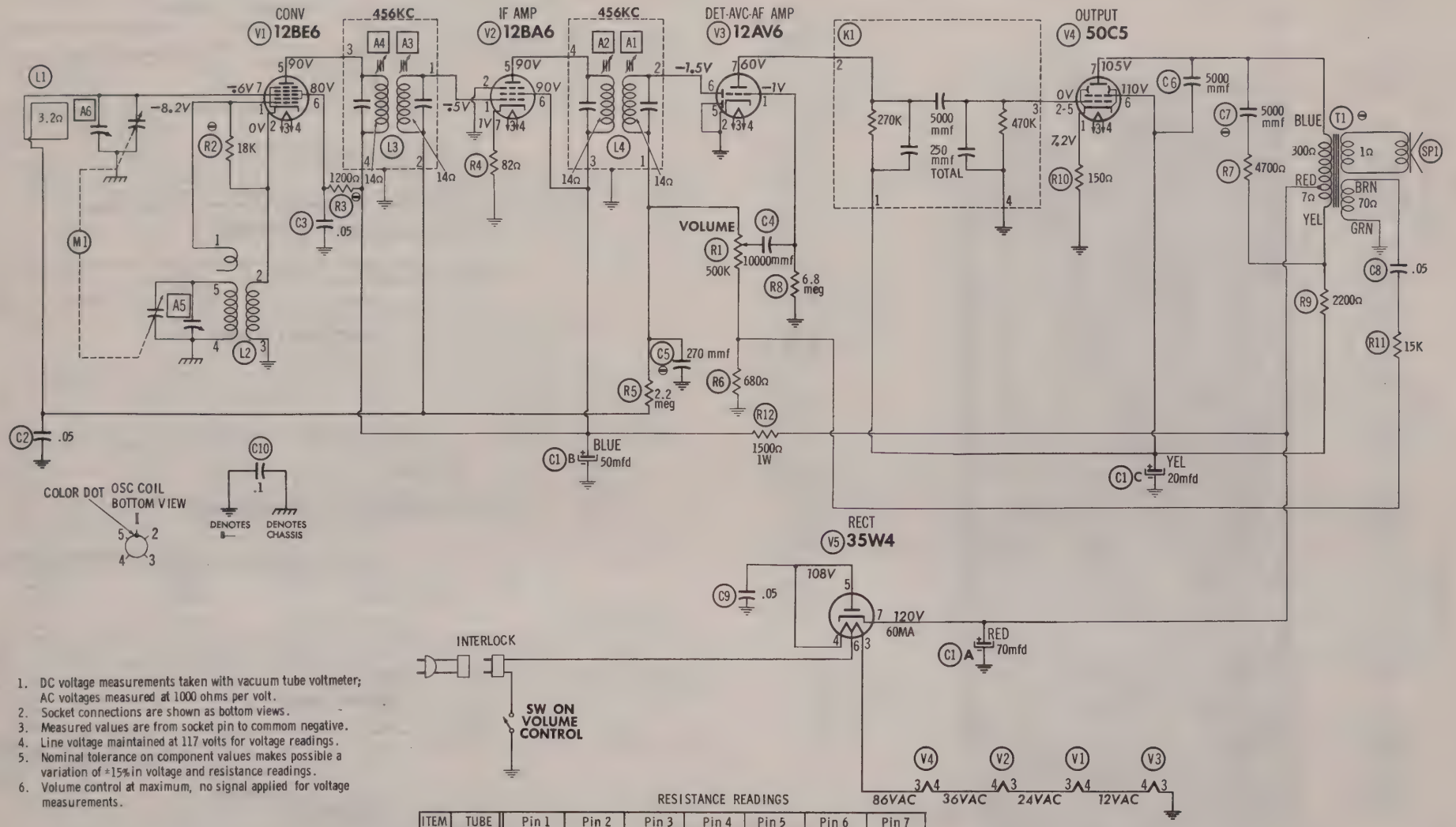
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	18K	.7Ω	24Ω	12Ω	†1500Ω	†2700Ω	2.7meg
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	82Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	0Ω	500K	†270K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†2200Ω	†300Ω
V5	35W4	TP	NC	86Ω	118Ω	118Ω	110Ω	20K(min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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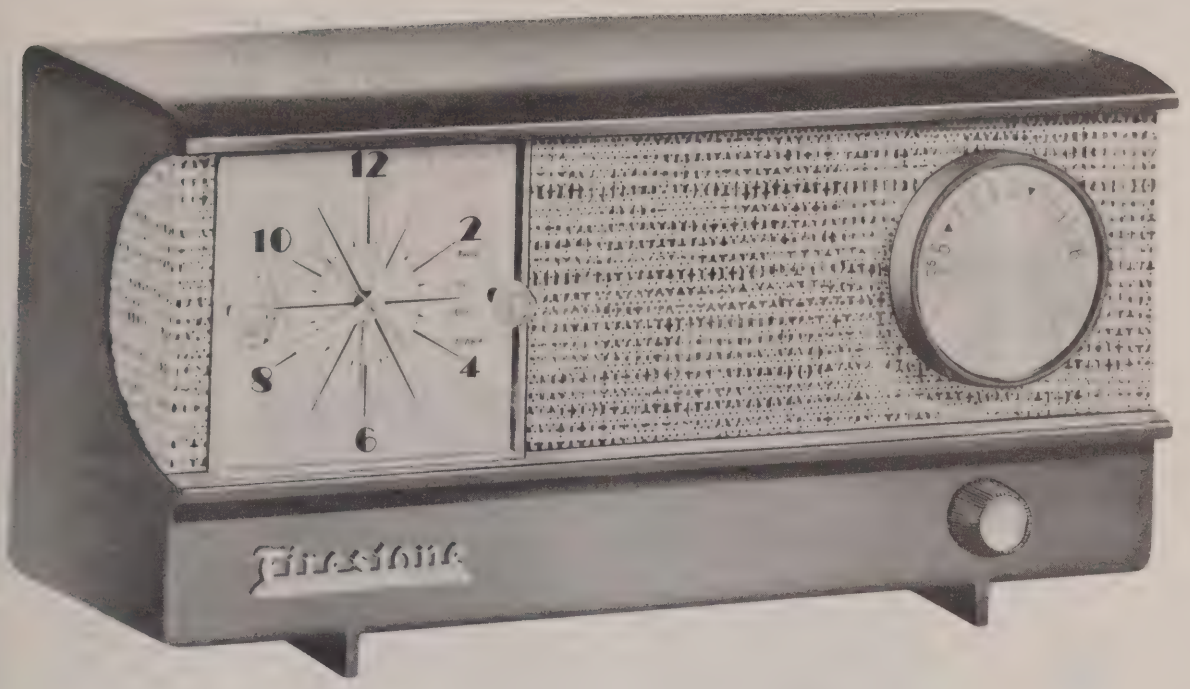
FIRESTONE MODEL 4-A-167 (Code 382-7-41900)

FIRESTONE MODEL
4-A-167 (Code 382-7-41900)



FIRESTONE MODEL
4-A-167 (Code 382-7-41900)

TRADE NAME	Firestone Model 4-A-167 (Code 382-7-41900)
MANUFACTURER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.27 Amp. @ 117 Volts AC (28 Watts Without Clock)
TUNING RANGE—BROADCAST	540KC - 1670KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 & 3 until no further improvement is noted.

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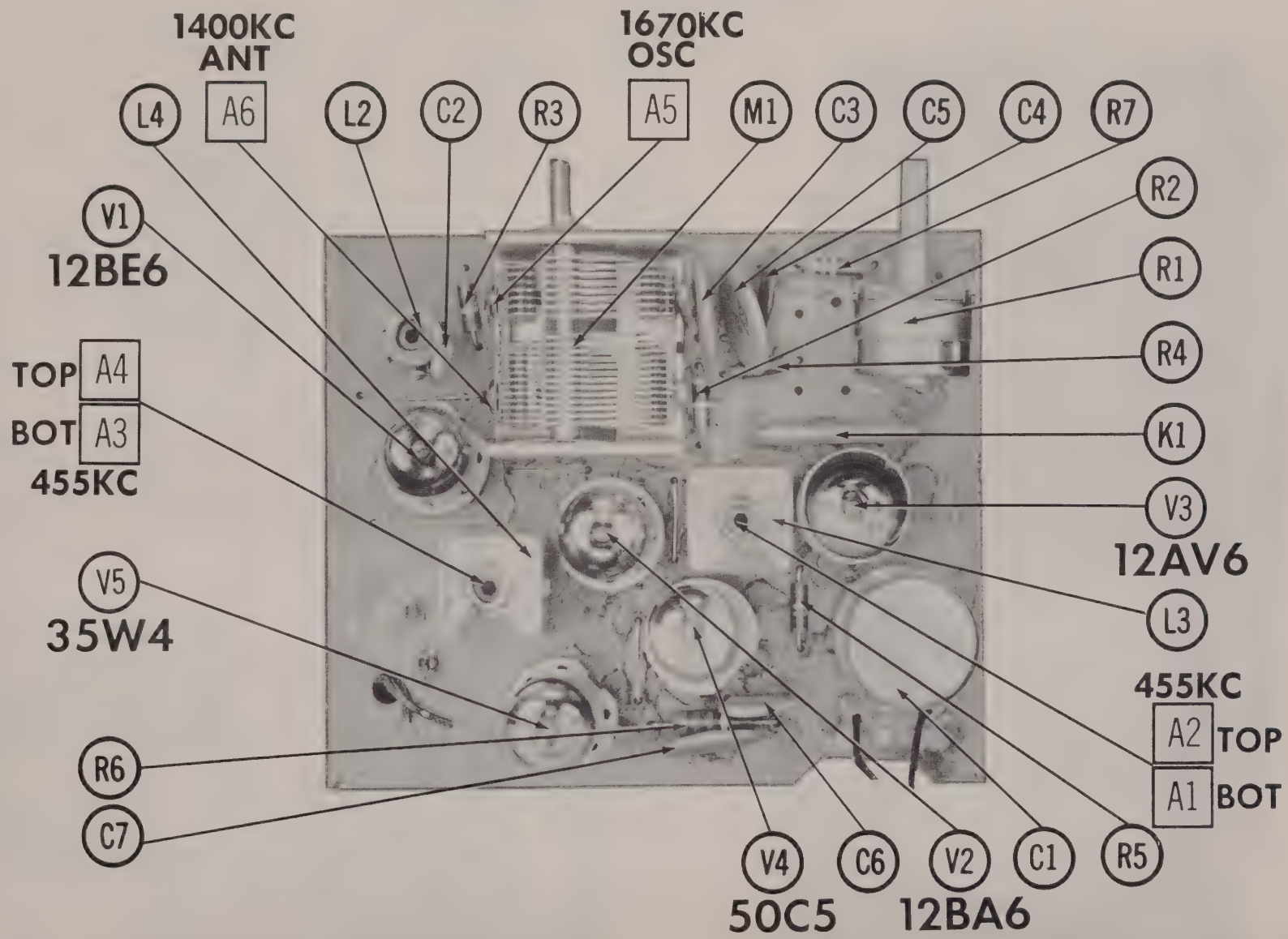


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	43672	AFH2-15-05	BBRD5315	PFP213.1	TDLD-8	MTD-301	TVA-2450
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	47			BPD-000047	DD-470	L10Q47	ED-47	UC-5447	5GA-Q47	①
C3	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C4	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C5	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C6	10000			BPD-01	DD-103	BYA6S1	ED-01	DC5U	5HK-S1	
C7	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	

① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	44746					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		~~FIRESTONE~~ PART No.	NOTES
	OHMS	WATT		
R2	100K			
R3	22K			
R4	2.2meg			
R5	120Ω			
R6	1200Ω	1		
R7	330K			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	~~FIRESTONE~~ PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	42700-18	Z1101	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	~~FIRESTONE~~ PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	44888	4A07	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		FIRESTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	44706-3					Note 1
L2	Osc. Coil	43644-5					
L3	Input IF	44282-1					
L4	Output IF	44282-1					

Note 1. Includes cabinet back.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FIRESTONE PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	2000mmf, 5000mmf, 250mmf, 220mmf, 470K, 470K, 6.8meg	43743-1	Aerovox PA-5U Centralab PC-150 Sprague DT-4

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	Tuning Cap	43987	2 Gang
M2	Clock	44551-061	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

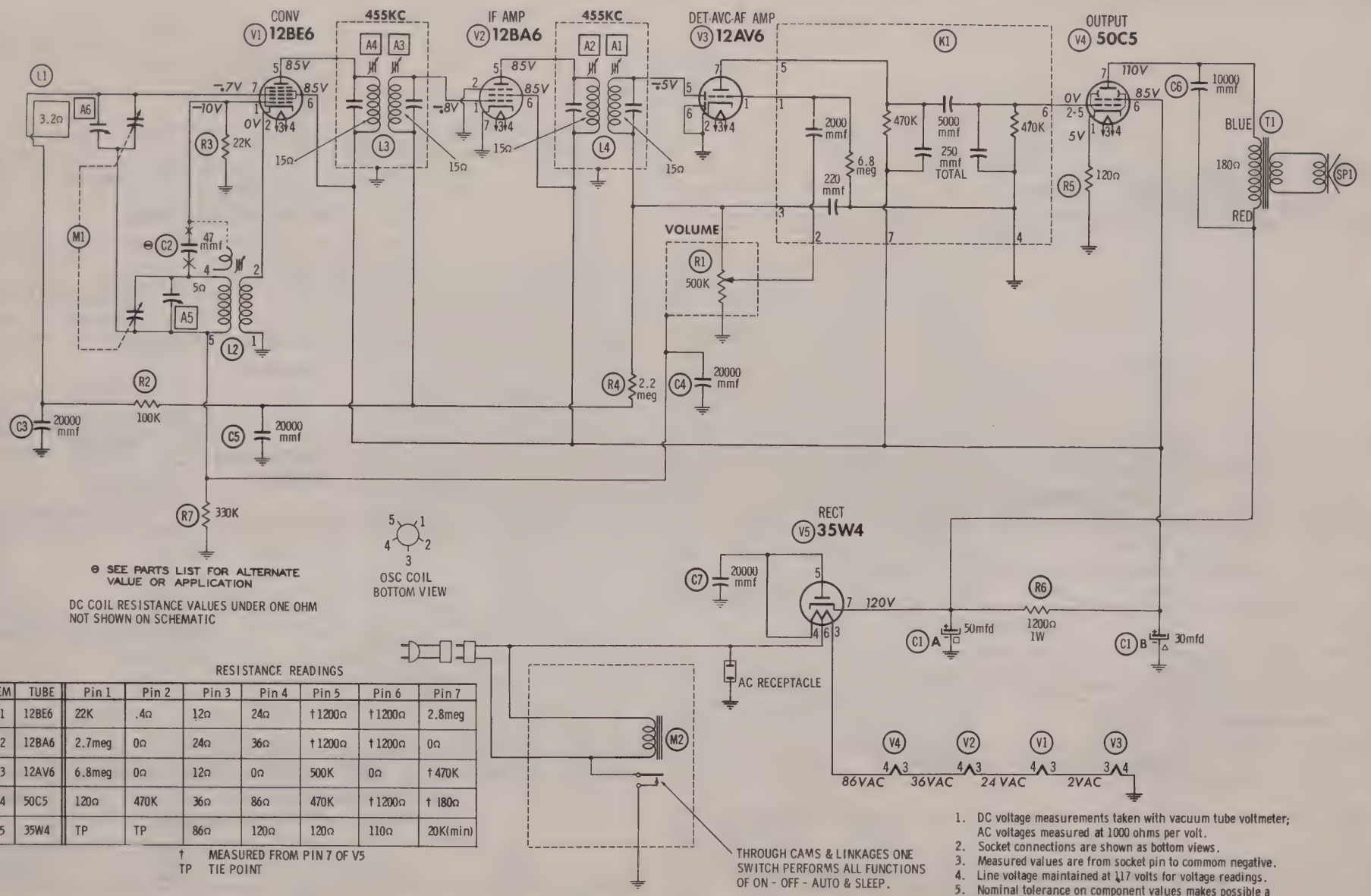
NAME	PART NO.	DESCRIPTION
Knob	44691-19	Tuning, charcoal
Knob	44691-73	Tuning, flame
Knob	44692-19	Volume, charcoal
Knob	44692-73	Volume, flame
Knobs	44646	Clock
Cabinet	44925-19	Charcoal
Cabinet	44925-73	Flame
Clock Crystal	44697-2	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

SET 394 FOLDER 11



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.4Ω	12Ω	24Ω	†1200Ω	†1200Ω	2.8meg
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	0Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	120Ω	470K	36Ω	86Ω	470K	†1200Ω	† 180Ω
V5	35W4	TP	TP	86Ω	120Ω	120Ω	110Ω	20K(min)

† MEASURED FROM PIN 7 OF V5
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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Howard W. Sams & Co., Inc. 1958

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

NEWCOMB MODEL E-50

NEWCOMB MODEL E-50

NEWCOMB MODEL E-50

TRADE NAME	Newcomb Model E-50		
MANUFACTURER	Newcomb Audio Prod. Co., 6824 Lexington Ave., Hollywood 38, California		
TYPE SET	AC Operated 3 Channel Audio Amplifier		
TUBES (Nine)	Types 12AX7 Mic 1-Mic 2 PreAmp., 6SJ7 AF Amplifier, 6J5 Phase Inverter, (4) 6L6GB Output, (2) 5V4GA Rectifier		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	1.5 Amp. @117 Volts AC (160Watts)

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic 1-Mic 2 PreAmp.	12AX7	
V2	AF Amplifier	6SJ7	
V3	Phase Inverter	6J5	
V4	Output	6L6GB	
V5	Output	6L6GB	
V6	Output	6L6GB	
V7	Rectifier	5V4GA	
V8	Rectifier	5V4GA	
V9	Rectifier		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	NEWCOMB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	◓ 20	475	CE-30	AFH4-19-10	D0179.3	FP474.5		Q-070	TVL-4832
B	■ 10	475						MT-0525	
C	▲ 10	475							
D	25	50							
C2	8	500	CE-4	PRS500V8	BR850	TC81	TD-8-500	MT-5010	TVA-1902

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	NEWCOMB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.022	600	CP-47	P688N-022	DD-203	CUB6S22	ED-02	GEM-6122	6TM-S22	
C4	.022	600	CP-47	P688N-022	DD-203	CUB6S22	ED-02	GEM-6122	6TM-S22	
C5	.022	600	CP-47	P688N-022	DD-203	CUB6S22	ED-02	GEM-6122	6TM-S22	
C6	10000		CM-32	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	.022	600	CP-47	P688N-022	DD-203	CUB6S22	ED-02	GEM-6122	6TM-S22	
C8	350		CM-26		DD-351	L10T35	ED-350	UC-5335	5GA-T35	
C9	.022	600	CP-47	P688N-022	DD-203	CUB6S22	ED-02	GEM-6122	6TM-S22	
C10	.1	400	CP-51	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C11	.0022	600	CP-48	P688N-0022	D6-222	CUB6D22	GP-2200	GEM-6222	6TM-D22	
C12	.047	600	CP-49	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C13	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C14	.1	600	CP-52	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C15	10000		CM-32	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C16	10000		CM-32	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	

CONTROLS

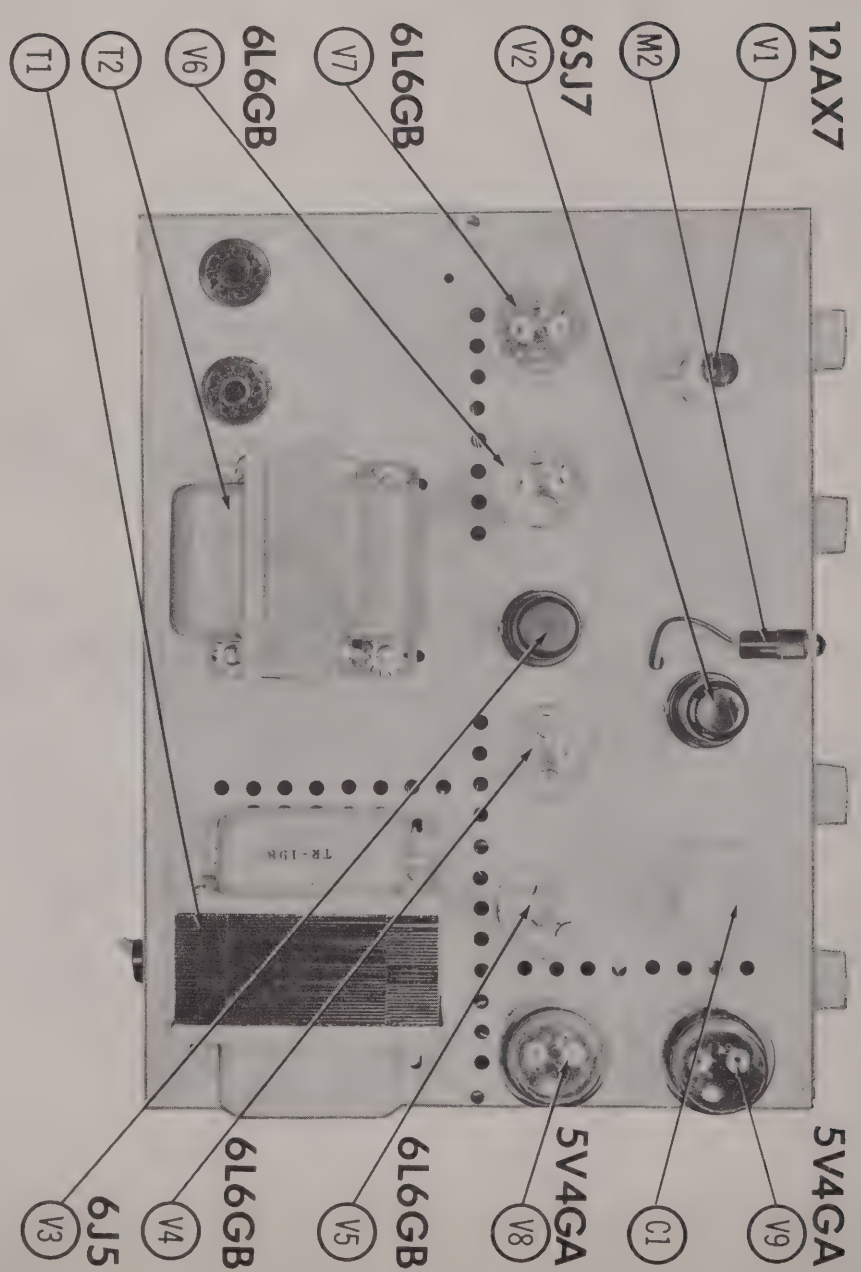
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NEWCOMB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	RV-49	B-77		Q17-139		Treble
B	Shaft			Not Req.		Not Req.		
C	Switch			KB-1		76-1		
R2	15meg	½	RV-40					Bass
R3	1meg	½	RV-62					Phono-Mike, Channel 1, Tap @ 700K & 1.3meg.
R4A	500K	½	RV-41	B-60	A47-500K-Z	Q-13-133	U48	Mike, Channel 2 (Volume)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		NEWCOMB PART No.	NOTES
	OHMS	WATT		
R5	18meg		RR-140	
R6	560K		RR-34	
R7	18meg		RR-140	
R8	560K		RR-34	
R9	10meg		RR-46	
R10	1meg		RR-37	
R11	56K		RR-25	
R12	470K		RR-33	
R13	470K		RR-33	
R14	560K		RR-34	
R15	3.3meg		RR-42	
R16	100Ω		RR-1	
R17	100K		RR-27	
R18	270K		RR-31	
R19	100K		RR-27	
R20	5600Ω		RR-15	
R21	100K		RR-27	
R22	56K		RR-25	
R23	180K		RR-29	
R24	220Ω		RR-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	NEWCOMB PART No.	NOTES
R25	125Ω	10	RR-150	
R26	56K		RR-25	
R27	220Ω		RR-2	
R28	56K		RR-25	
R29	180K		RR-29	
R30	220Ω		RR-2	

ITEM No.	RATING OHMS	RATING WATT	NEWCOMB PART No.	NOTES
R31	56K		RR-25	
R32	220Ω		RR-2	
R33	3000Ω	5	RR-95	
R34	27K		RR-22	
R35	56K		RR-25	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC 1.5A	680VCT @ .290A	5VAC @ 4A	6.3VCT 4.5A	TR-198					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	2700Ω CT	250Ω Tap @ 70V, 16Ω, 8Ω, 4Ω	TR-191						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA NEWCOMB PART No. FUSE	NEWCOMB PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 125V S/B	FA-21		313003, (3AG 3A 125V S/B)	341001	MDL3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	NEWCOMB PART No.	NOTES
M2	Pilot Lamp		#51

CABINETS & CABINET PARTS

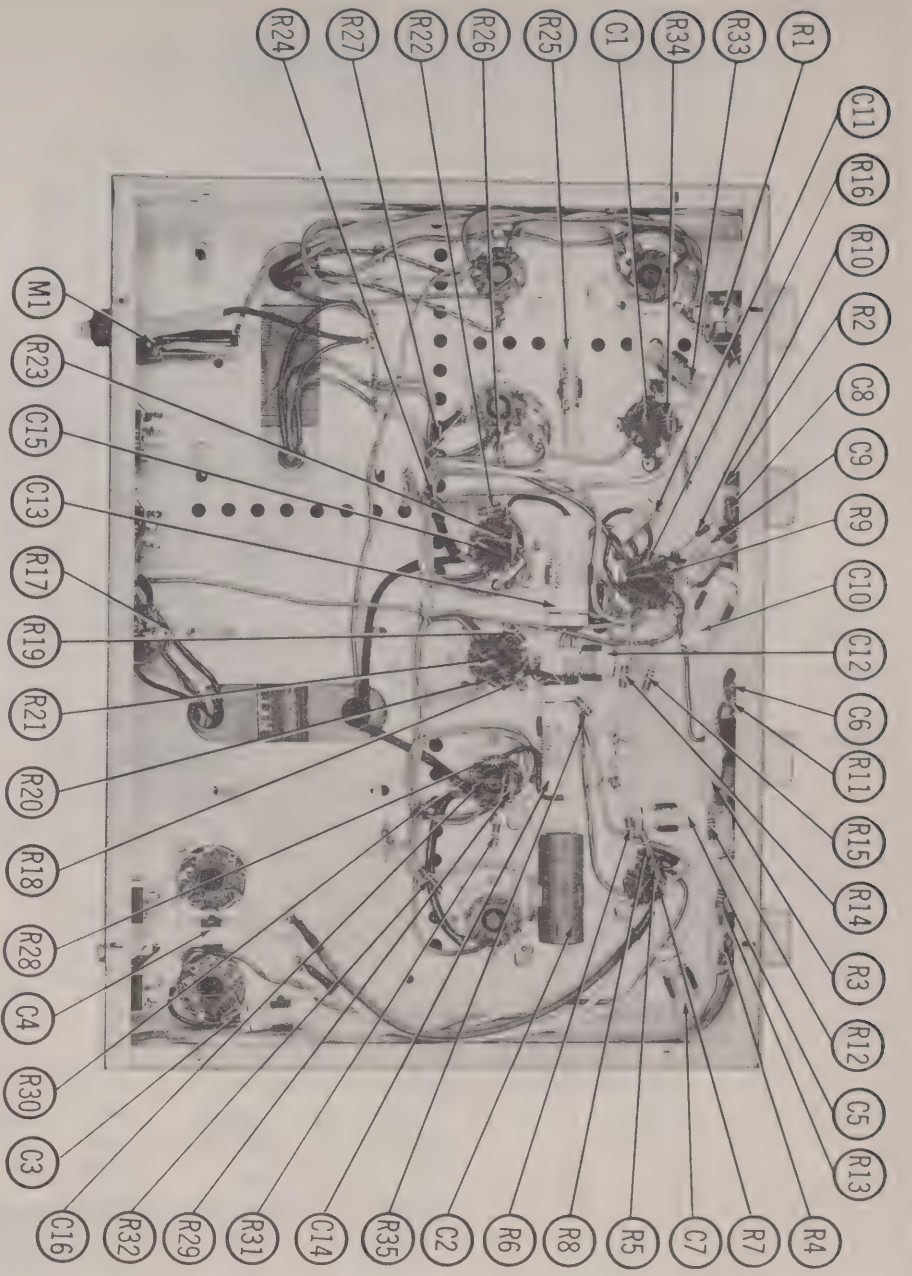
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

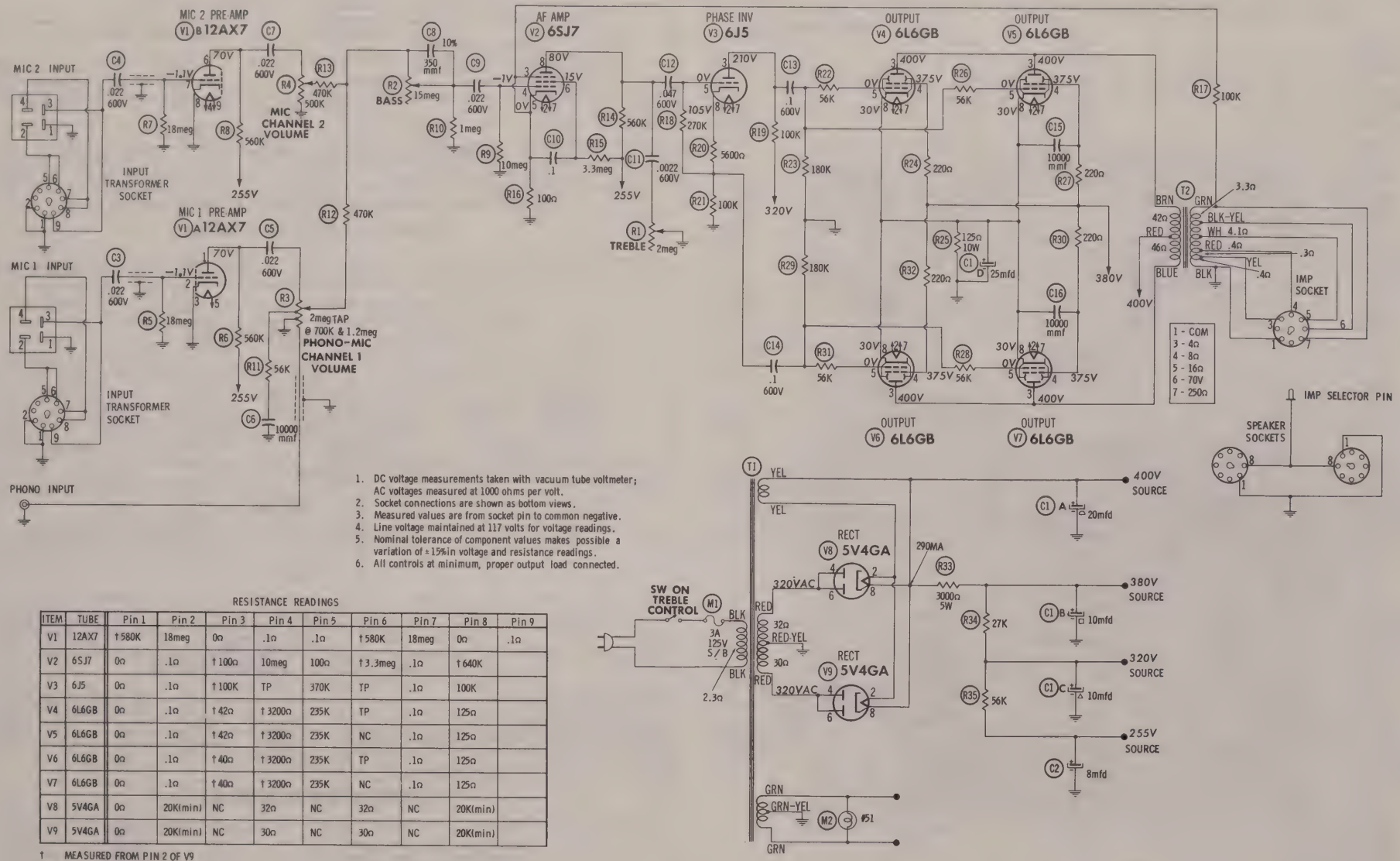
NAME	PART NO.	DESCRIPTION
Knobs	KA-15K	Ivory (Bass, Treble, Channel#1, and Channel #2)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†580K	18meg	0Ω	.1Ω	.1Ω	†580K	18meg	0Ω	.1Ω
V2	6SJ7	0Ω	.1Ω	†100Ω	10meg	100Ω	†3.3meg	.1Ω	†640K	
V3	6J5	0Ω	.1Ω	†100K	TP	370K	TP	.1Ω	100K	
V4	6L6GB	0Ω	.1Ω	†42Ω	†3200Ω	235K	TP	.1Ω	125Ω	
V5	6L6GB	0Ω	.1Ω	†42Ω	†3200Ω	235K	NC	.1Ω	125Ω	
V6	6L6GB	0Ω	.1Ω	†40Ω	†3200Ω	235K	TP	.1Ω	125Ω	
V7	6L6GB	0Ω	.1Ω	†40Ω	†3200Ω	235K	NC	.1Ω	125Ω	
V8	5V4GA	0Ω	20K(min)	NC	32Ω	NC	32Ω	NC	20K(min)	
V9	5V4GA	0Ω	20K(min)	NC	30Ω	NC	30Ω	NC	20K(min)	

† MEASURED FROM PIN 2 OF V9
NC NO CONNECTION
TP TIE POINT

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PACEMAKER
MODELS PM 10, PM 10S

PACEMAKER
MODELS PM 10, PM 10S

PACEMAKER
MODELS PM 10, PM 10S

TRADE NAME	Pacemaker PM 10, PM 10S
MANUFACTURER	Bell Sound Systems, Inc., 555 Marion Road, Columbus 7, Ohio
TYPE SET	AC Operated 2 Channel 10 Watt Audio Amplifier
TUBES (Four)	Types 6AV6 Mic Preamplifier, 12AX7 AF Amplifier, 6L6GB Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING .7 Amp. @ 117 Volts AC (67 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic Pre-Amplifier	6AV6	
V2	AF Amplifier	12AX7	
V3	Output	6L6GB	
V4	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	450		AFH4-83	D0620	FP432.9	TMQ-98	Q-405	*R2558
B	15	450							
C	10	450							
D	100	50							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C3	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C5	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	.03	400		P488N-03	DF-303	CUB6S3		GEM-413	4TM-S3	
C9	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	B-20066P140	B-70	A47-1meg-Z	QI3-137	U53	Mike (Volume)
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	B-20066P140	B-70	A47-1meg-Z	QI3-137	U53	Phono (Volume)
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	100Ω	2	B-20066P141	WN-101	A43-100	WPK100	R100L	Hum Balance (Wire wound)
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

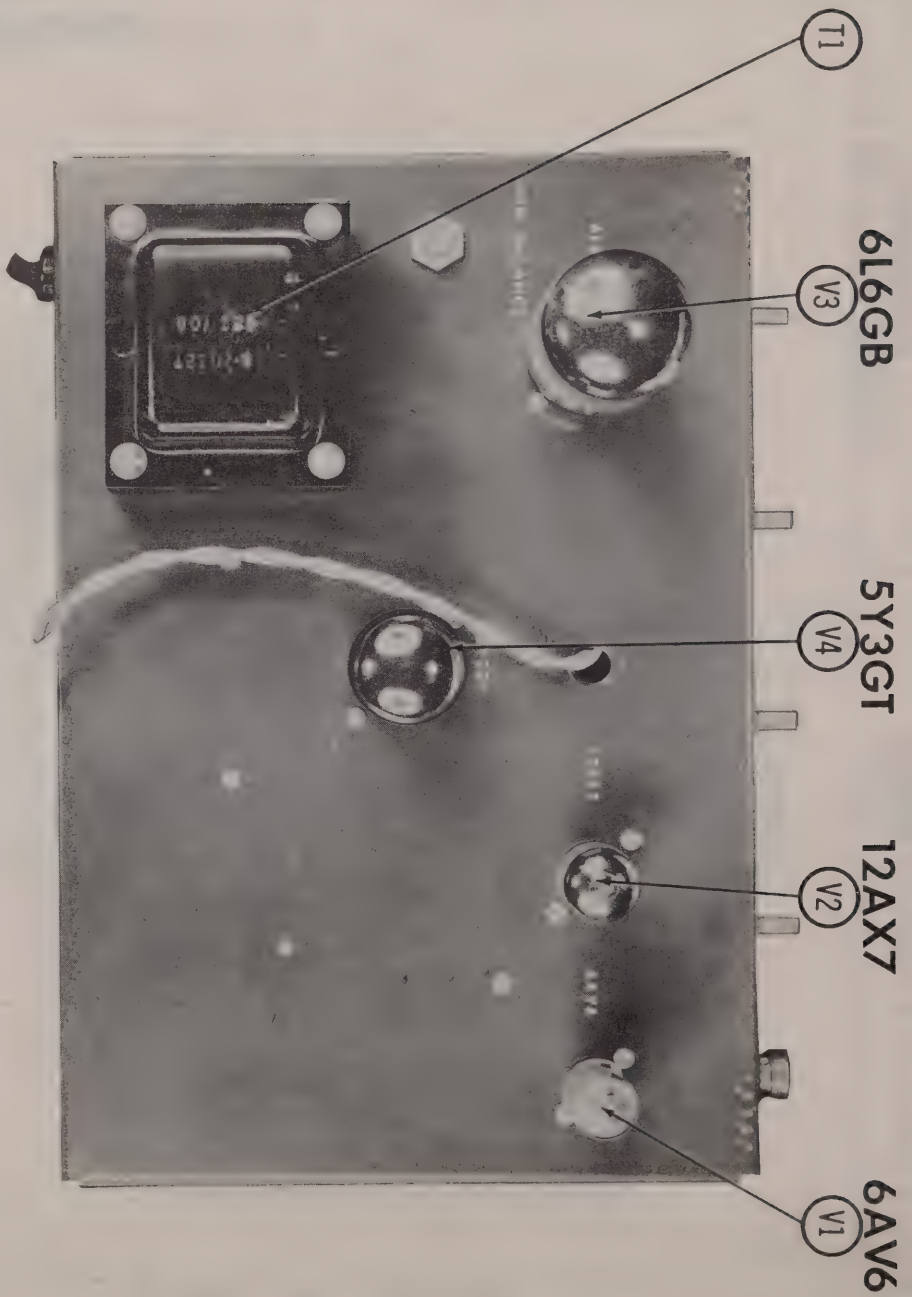
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		BELL SOUND PART No.	NOTES
	OHMS	WATT		
R4	4.7meg			
R5	100K			
R6	270K			
R7	270K			
R8	470K			
R9	33K			
R10	4700Ω			
R11	2.2meg			

ITEM No.	RATING		BELL SOUND PART No.	NOTES
	OHMS	WATT		
R12	220K			
R13	2700Ω			
R14	270K			
R15	100K			
R16	350Ω	5		
R17	18K			
R18	10K	1		
R19	270K			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .7A	740VCT @ .074A	5V @ 2A	B-20327						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.7A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4700Ω	16Ω tap @ 8Ω, 4Ω	B-20309						

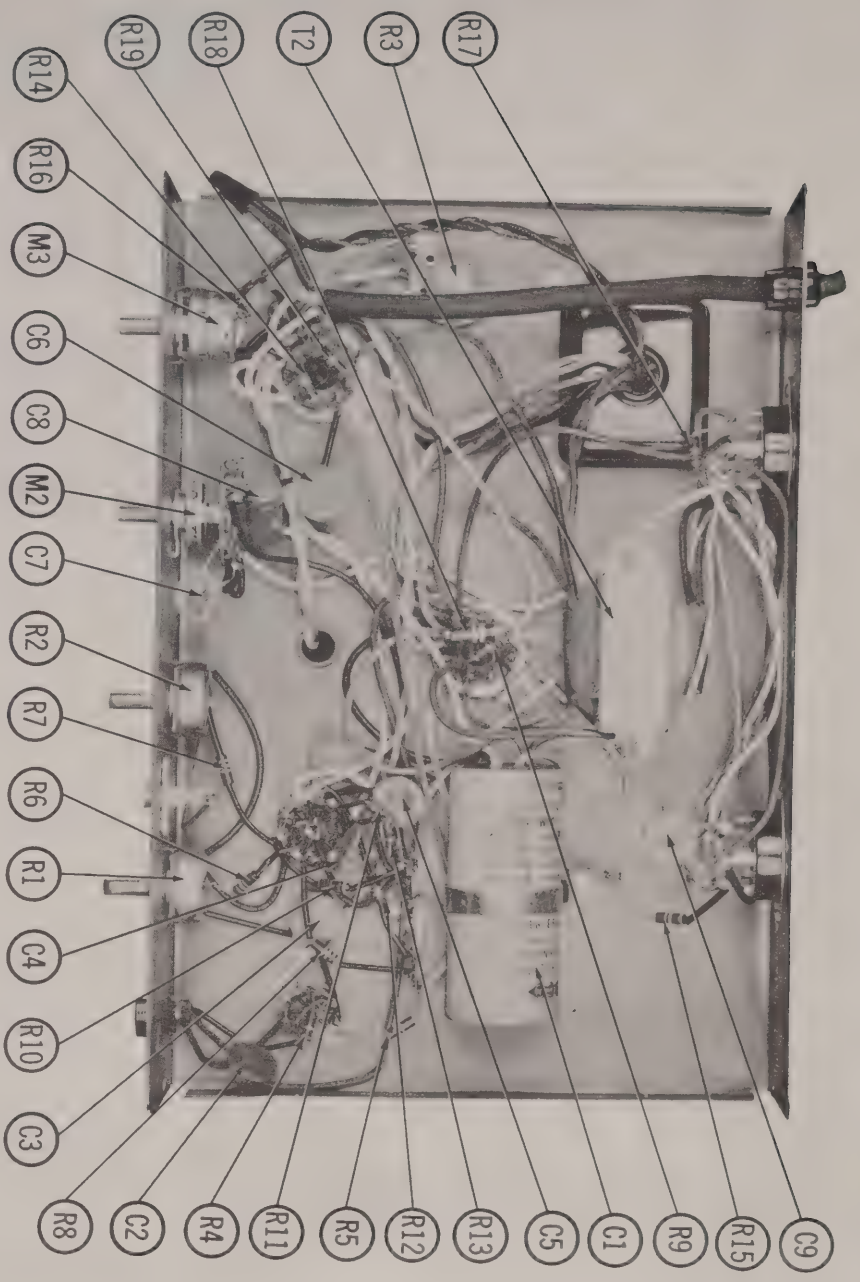
MISCELLANEOUS

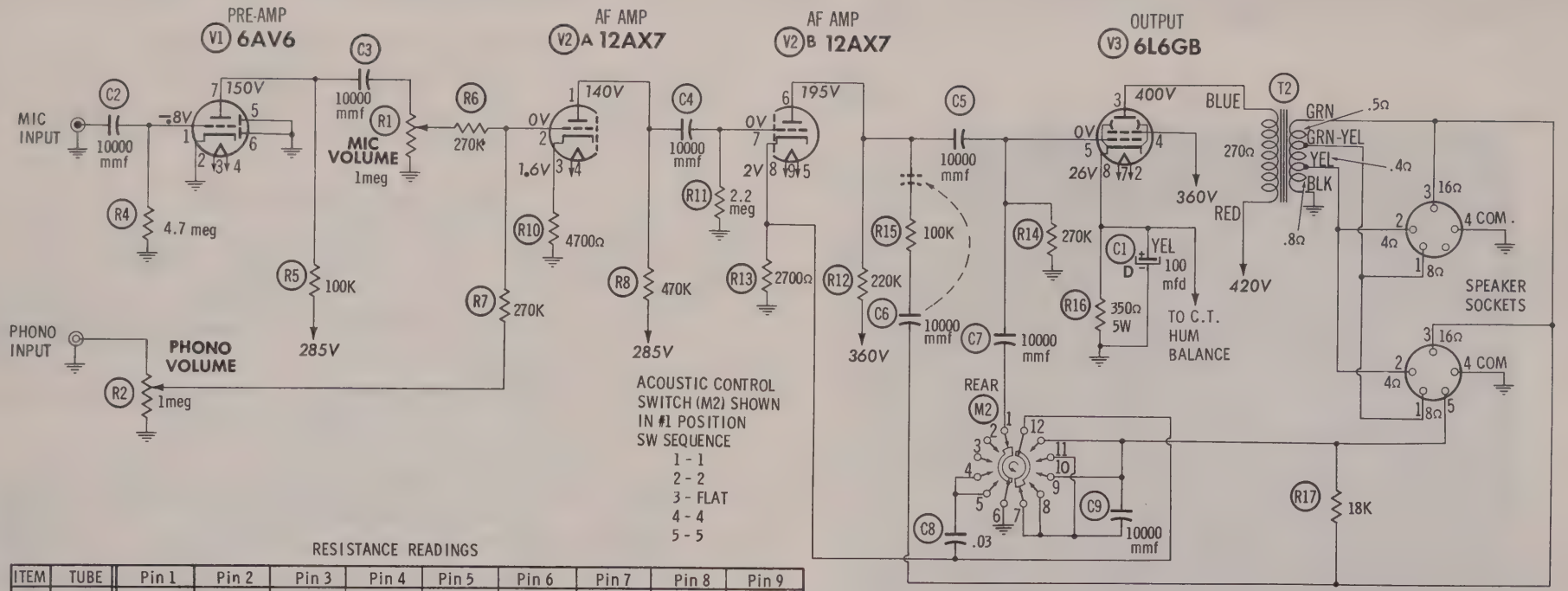
ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M1	Pilot Lamp		#44
M2	Switch		Acoustic Control (Rotary, wafer type)
M3	Switch		Power on-off

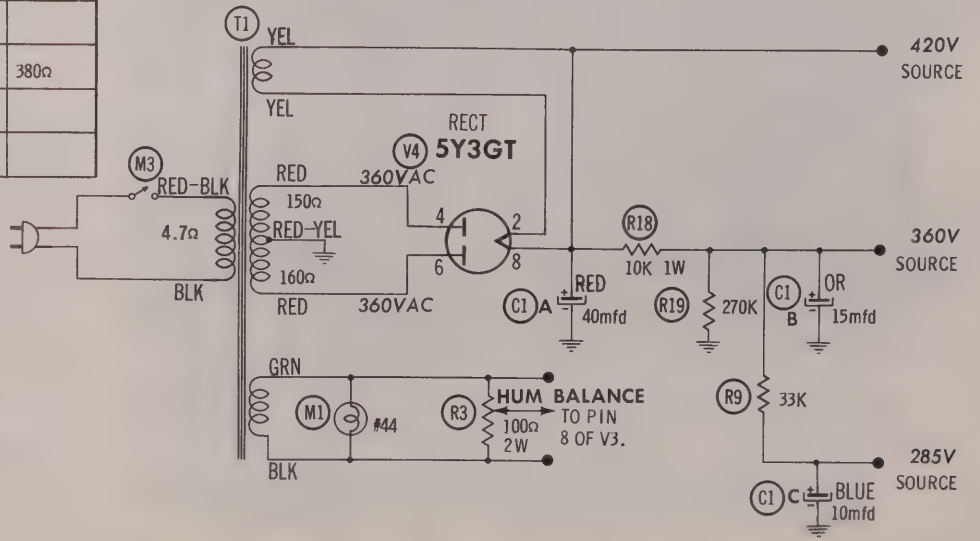
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AV6	4.7meg	0Ω	380Ω	380Ω	0Ω	0Ω	†140K		
V2	12AX7	†510K	270K	4700Ω	380Ω	380Ω	†230K	2.2meg	2700Ω	380Ω
V3	6L6GB	TP	380Ω	†270Ω	†10K	270K	NC	380Ω	350Ω	
V4	5Y3GT	TP	20K(Min)	TP	150Ω	NC	160Ω	TP	20K (Min)	

† MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

RCA VICTOR MODELS 9X10FE, 9X10JE, 9X10ME (Ch. RC-1166A)

RCA VICTOR MODELS 9X10FE, 9X10JE, 9X10ME (Ch. RC-1166A)

RCA VICTOR MODELS 9X10FE, 9X10JE, 9X10ME (Ch. RC-1166A)

TRADE NAME	RCA Victor Models 9-X-10FE, 9-X-10JE, 9-X-10ME (Ch. RC-1166A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N.J.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .27 Amp. @117 Volts AC (27 Watts).
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B- Volume control should be at maximum position. Output of signal gnerator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400% Mod.)	Tuning gang fully open	Across Voice Coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	1400KC	"	A5	"
4.		"	600KC	600KC	"	A6	"

SET 394 FOLDER 14

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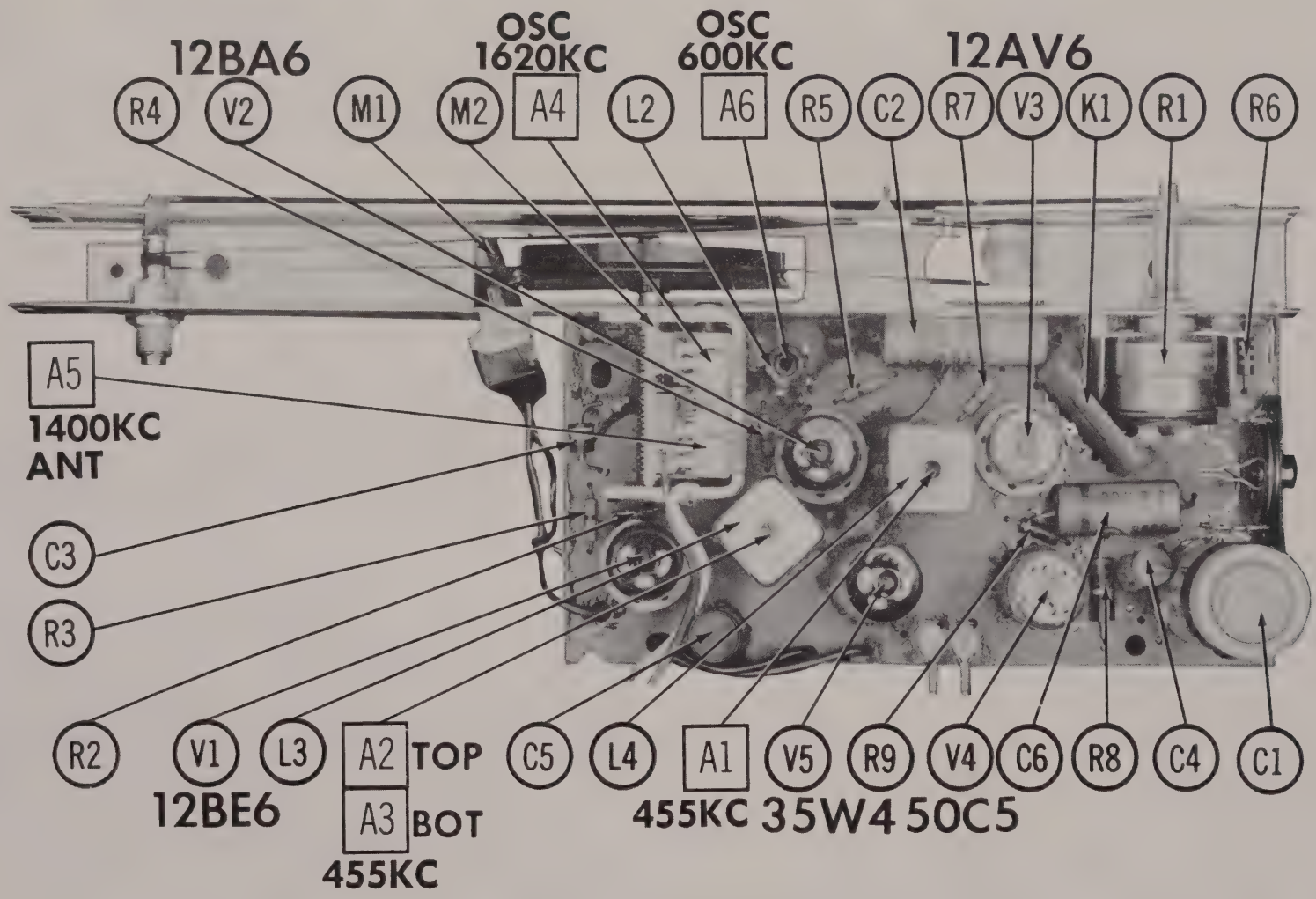


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	103197	PRS150V5050	BBRD5515	TCD49	TDLD-9	MTD-1550	TVA-2453
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400	73553	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C3	56		100085	NP0-SI56	D6-560	L10Q56	ED-56			10%
C4	.012	400	103195							10%
C5	.047	400	103239	P488N-047		BC6S47J		ACE6147	4SE-S47	
C6	.082	400	103191							10%

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	104802					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA VICTOR PART No.	NOTES
	OHMS	WATT		
R2	33K		502333	
R3	100Ω		502110	
R4	3.3meg		502533	
R5	100Ω		502110	

ITEM No.	RATING		RCA VICTOR PART No.	NOTES
	OHMS	WATT		
R6	47K		502347	
R7	3.3meg		502533	
R8	1200Ω	1	512212	
R9	150Ω		502115	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA VICTOR PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	1.6Ω	100661		A-3032①		24S51 ①		①Drill New Mounting Hole

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA VICTOR PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	104099 ①	4A07 ①	① Parallel and phase.
SP2	4"	PM	3-4Ω	104099①	4A07 ①	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RCA VICTOR PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	103993					Includes Cabinet Back
L2	Osc. Coil	103204					
L3	Input IF	103206					
L4	Output IF	103207	16-6780	BC-357	13-PC1	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA VICTOR PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	5000mmf, 5000mmf 220mmf, 125mmf, 250mmf, 470K, 470K, 6.8meg.	103205	

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M1	Dial Lamp	103211	#1847
M2	Tuning Cap.	103209	2Gang (Ant. 22-410mmf)

CABINETS & CABINET PARTS

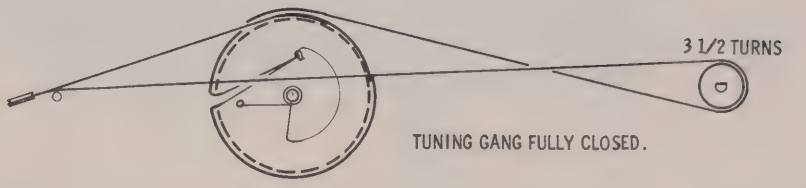
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

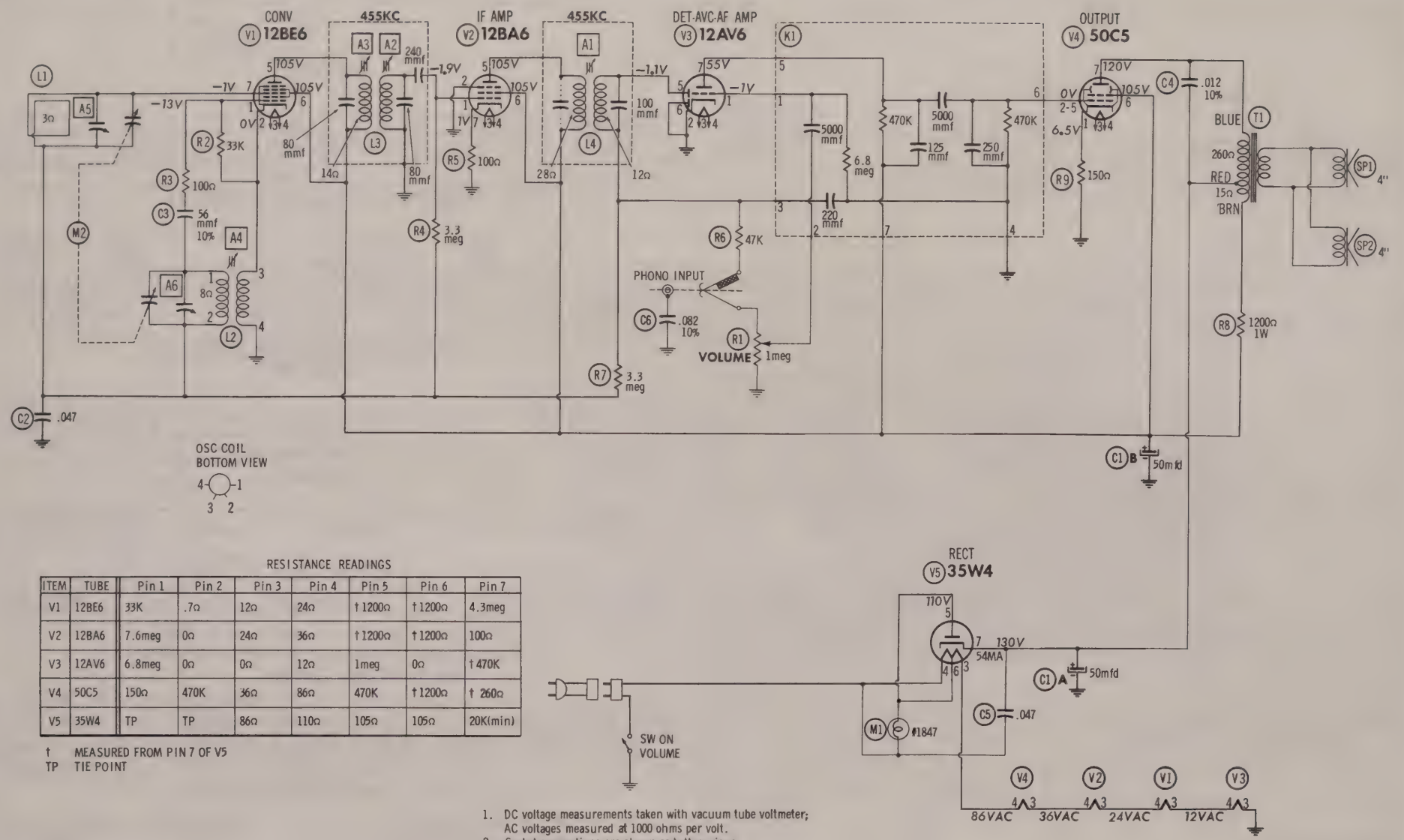
NAME	PART NO.	DESCRIPTION
Knob	103228	Tuning, Antique White
Knob	103229	On-Off-Volume, Antique White
Cabinet	Y3903	Pink, Model 9-X-10FE
Cabinet	Y3905	Gray, Model 9-X-10JE
Cabinet	Y3904	Maple Sugar, Model 9-X -10ME
Cabinet Front	Y3906	Antique White
Dial	103227	
Dial Pointer	103213	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	33K	.7Ω	12Ω	24Ω	†1200Ω	†1200Ω	4.3meg
V2	12BA6	7.6meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1200Ω	† 260Ω
V5	35W4	TP	TP	86Ω	110Ω	105Ω	105Ω	20K(min)

† MEASURED FROM PIN 7 OF V5
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

SILVERTONE MODELS 8059, A, 8060, A, 8061, A, 8069, A (Ch. 528.53150)

SILVERTONE MODELS 8059, A, 8060, A, 8061, A, 8069, A (Ch. 528.53150)

SILVERTONE MODELS 8059, A, 8060, A, 8061, A, 8069, A (Ch. 528.53150)

TRADE NAME	Silvertone Models 8059, 8059A, 8060, 8060A, 8061, 8061A, 8069, 8069A (Ch. 528. 53150)		
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Eleven		
POWER SUPPLY	105-125 Volts AC-60 Cycles	RATING	1 Amp. @ 117 Volts AC (110 Watts)
TUNING RANGE—BROADCAST	535KC - 1620KC	FREQ. MOD.	88MC - 108MC

RECORD CHANGER CHASSIS 528. 56160 OR 528. 56170 USED IN MODELS 8059, 8060, 8061 AND 8069.
RECORD CHANGER CHASSIS 528. 56220 OR 528. 56230 USED IN MODELS 8059A, 8060A, 8061A AND 8069A.
FOR SERVICE INFORMATION ON RECORD CHANGERS — SEE SILVERTONE CHASSIS 567. 40000 — PHOTOFACT SET 365 FOLDER 13.

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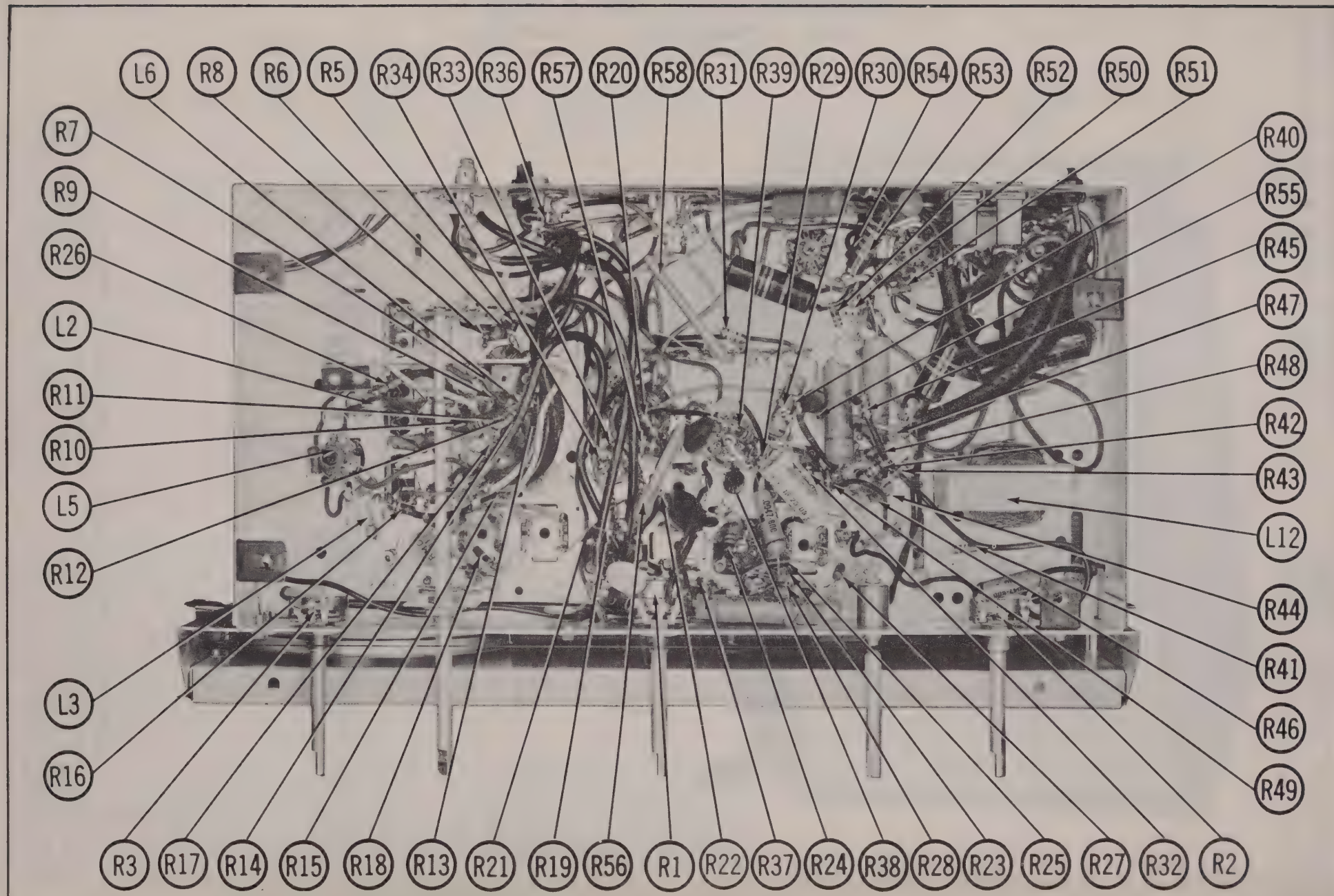
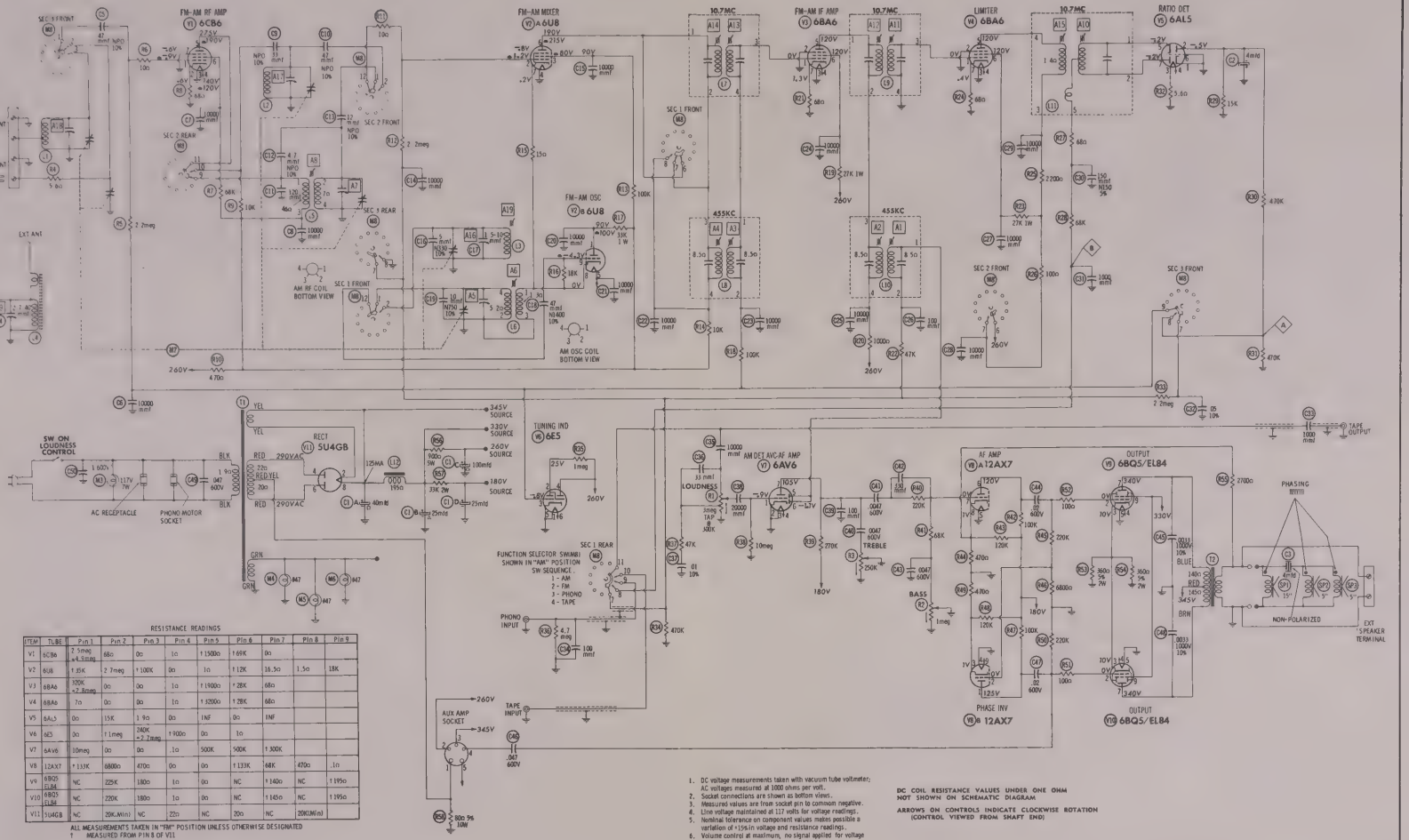
H417



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	2.5meg ↔4.5meg	68Ω	0Ω	1Ω	↑150Ω	↑69K	0Ω		
V2	6U8	↑35K	2.7meg	↑100K	0Ω	1Ω	↑12K	16.5Ω	1.5Ω	18K
V3	6BA6	320K ↔2.8meg	0Ω	0Ω	1Ω	↑1900Ω	↑28K	68Ω		
V4	6BA6	1Ω	0Ω	0Ω	1Ω	↑3200Ω	↑28K	68Ω		
V5	6AL5	0Ω	15K	1.9Ω	0Ω	INF	0Ω	INF		
V6	6E5	0Ω	↑1meg	240K ↔2.2meg	↑900Ω	0Ω	1Ω			
V7	6AV6	10meg	0Ω	0Ω	.1Ω	500K	500K	↑300K		
V8	12AX7	↑133K	68000Ω	470Ω	0Ω	0Ω	↑133K	68K	470Ω	.1Ω
V9	6BQ5 EL84	NC	225K	180Ω	1Ω	0Ω	NC	↑140Ω	NC	↑195Ω
V10	6BQ5 EL84	NC	220K	180Ω	1Ω	0Ω	NC	↑145Ω	NC	↑195Ω
V11	5U4GB	NC	29K-Min)	NC	22Ω	NC	20Ω	NC	20K(Min)	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
↑ MEASURED FROM PIN 8 OF V11
– MEASURED IN "AM" POSITION
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
*Howard W. Sams & Co., Inc. 1958

394-15

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to AM RF stator lug (center section) of Tuning gang. Low side to chassis.	455KC (400% Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	1620KC	"	A5	"
3.	"	"	535KC	"	535KC	"	A6	"
4.	"	High side to AM antenna stator lug (rear section) of Tuning gang. Low side to chassis.	1400KC	"	1400KC	"	A7	"
5.	"	"	600KC	"	600KC	"	A8	"
6.		Loop	1400KC	"	1400KC	"	A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 thru 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.005mfd	High side to FM RF stator lug (center section) of tuning gang. Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A10, A11 A12, A13 A14	Adjust for maximum deflection.
8.	"	"	"	"	"	DC probe to point (B). Common to point (A)	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.005mfd	High side to FM RF stator lug (center section) of Tuning gang. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A10, A11, A12, A13 A14	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A15	Adjust A15 so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude & straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	.005mfd	High side to FM RF stator lug (center section) of Tuning gang. Low side to chassis.	108MC	FM	108MC	DC probe to point (A). Common to chassis.	A16	Adjust for maximum deflection.
10.	270Ω Carbon Resistor	High side to FM antenna terminal. Low side to chassis.	104MC	"	104MC	"	A17, A18	"
11.	"	"	88MC	"	88MC	"	L3	Adjust by compressing or expanding for maximum deflection while rocking tuning gang thru 88MC signal.

FIG. 1

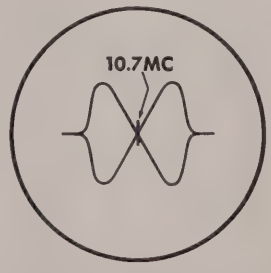
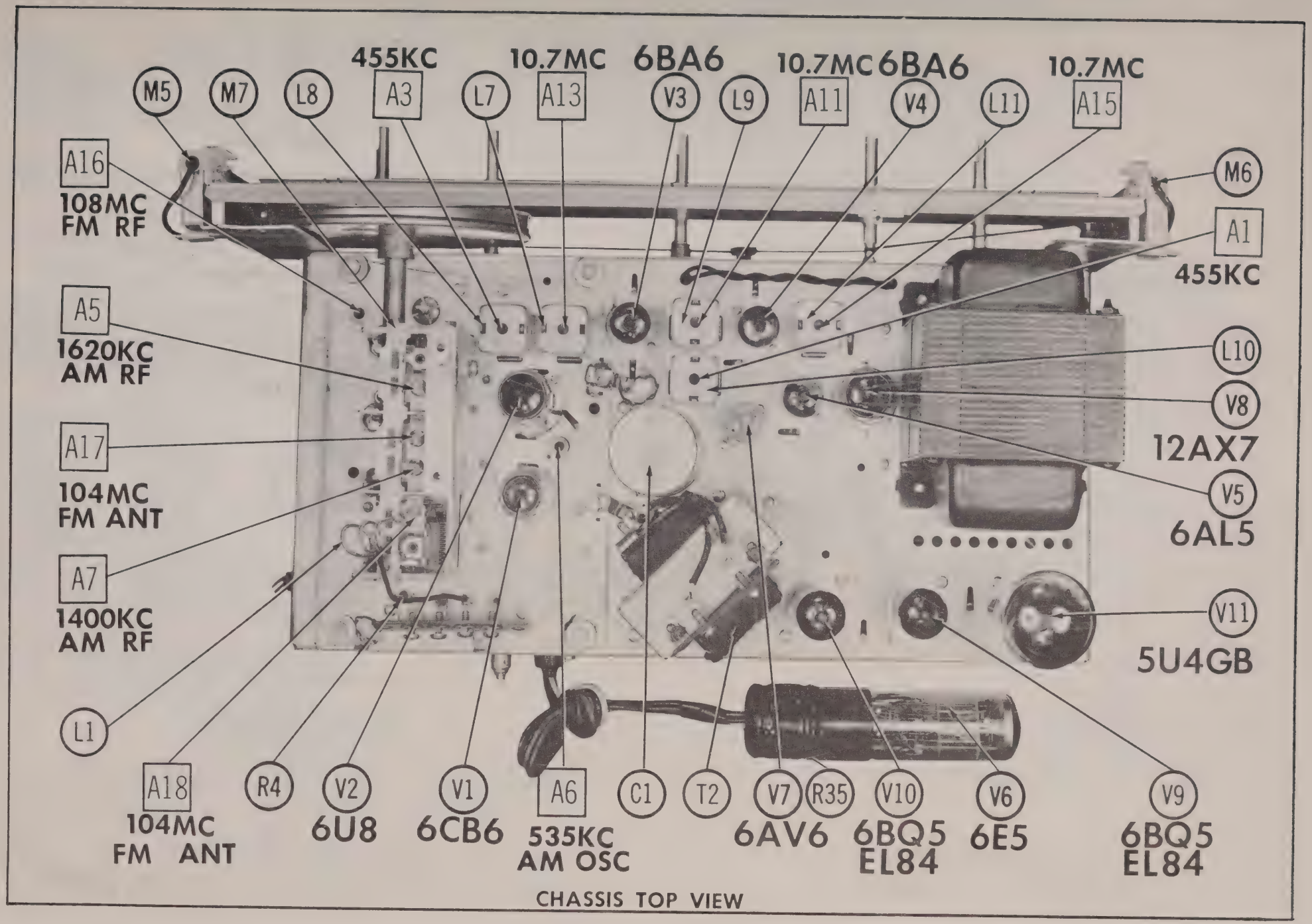


FIG. 2



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM-AM RF Amplifier	6CB6	
V2	FM-AM Mixer—		
	FM-AM Osc.	6U8	
V3	FM-AM IF Amplifier	6BA6	
V4	FM Limiter	6BA6	
V5	Ratio Detector	6AL5	

ITEM No.	USE	TYPE	NOTES
V6	Tuning Indicator	6E5	
V7	AM Det. - AVC - AF Amp.	6AV6	
V8	AF Amp. - Phase Inv.	12AX7	
V9	Output	6BQ5/EL84	
V10	Output	6BQ5/EL84	
V11	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	350	18-35-3		D0044				
B	▲25	350			BR2035				
C	▬100	350							
D	25	350							
C2	4	50	18-25-0	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1402
C3	4	150NP	18-9-5	NP-PRS450V4	BBR8-150 † BBR8-150 †	TC41 † TC41 †	TD-8-150 † TD-8-150 †	MT-1508 † MT-1508 †	

† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	2.7-40		19-180-0							
C5	47		15-470611	NPO-SI 47	TCZ-47	CTA6Q47C	TCO-47		5TCC-Q47	NPO 10%
C6	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C9	33		15-330611	NPO-SI 33	TCZ-33	CTA6Q33C	TCO-33	ZT-5433	5TCC-Q33	NPO 10%
C10	47		15-470611	NPO-SI 47	TCZ-47	CTA6Q47C	TCO-47		5TCC-Q47	NPO 10%
C11	120		15-12161	SI 120	D6-121	LT6T12	GP-120	UC-5312	5GA-T12	
C12	4.7		20-23-0	NPO-SI 4.7	TCZ-4R7	CTA6V47C	TCO-4.7	ZT-5547	5TCCB-V47	NPO 10%
C13	12		15-12061		TCZ-12	CTA6Q12C	TCO-12			NPO 10%
C14	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C15	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C16	5		15-509612							N330 10%
C17	1.5-10		19-2-5							
C18	47		15-470115							N1400 10%
C19	10		15-100614	N750-SI 10	TCN-10	CTA6Q10U	TC7-10	NT-541	5TCU-Q1	N750 10%
C20	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C21	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C22	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C23	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C24	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C25	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C26	100		15-10116	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C27	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C28	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C29	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C30	150		15-15111							N150 5%
C31	1000		15-10261	SI 1000	D6-102	LT6D1	GP-1000	UC-521	5GA-D1	
C32	.05	200	16-50323					GEM-1615		10%
C33	1000		15-10261	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C34	100		15-10116	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C35	10000		15-10317	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C36	33		15-33061	SI 33	D6-330	LT6Q33	GP-33	UC-5433	5GA-Q33	
C37	.01	400	16-10343					GEM-1611		10%
C38	20000		15-20317	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C39	100		15-10116	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C40	.0047	600	16-47257	P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C41	.0047	600	16-47257	P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C42	330		15-33111	BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C43	.0047	600	16-47257	P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C44	.02	600	16-20353	P688N-02	DD-203	CUB6S2	ED-02	GEM-612	6TM-S2	
C45	.0033	10000	16-33268							10%
C46	.047	600	16-47353	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C47	.02	600	16-20353	P688N-02	DD-203	CUB6S2	ED-02	GEM-612	6TM-S2	
C48	.0033	1000	16-33268							10%
C49	.047	600	20-647-1	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C50	.1	600	20-611-1	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	

CONTROLS

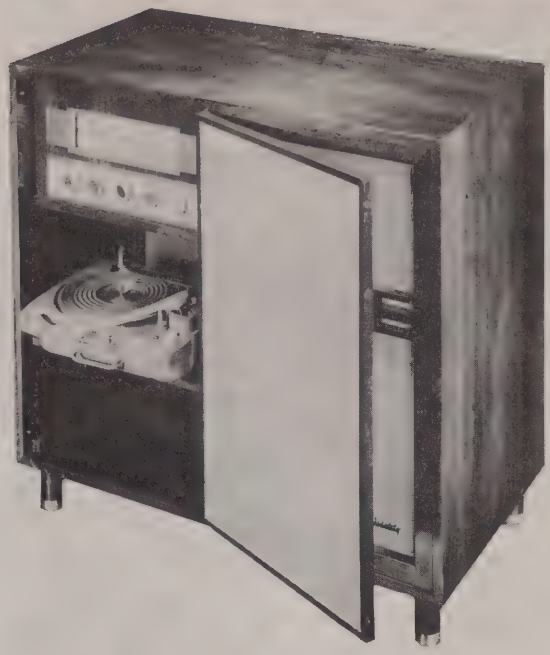
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	24-283-0	ABT-8517	A47F-3meg		UT-461	Loudness, Tap @ 300K
B	Shaft			AK-7	FS-3		Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12		US-26	
R2A	1meg	½	24-153-2	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	250K	½	24-152-2	B-51	A47-250K-Z	Q13-130	U44	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

* Use KR-1 on Red Label Control

PHOTOFACT* Folder

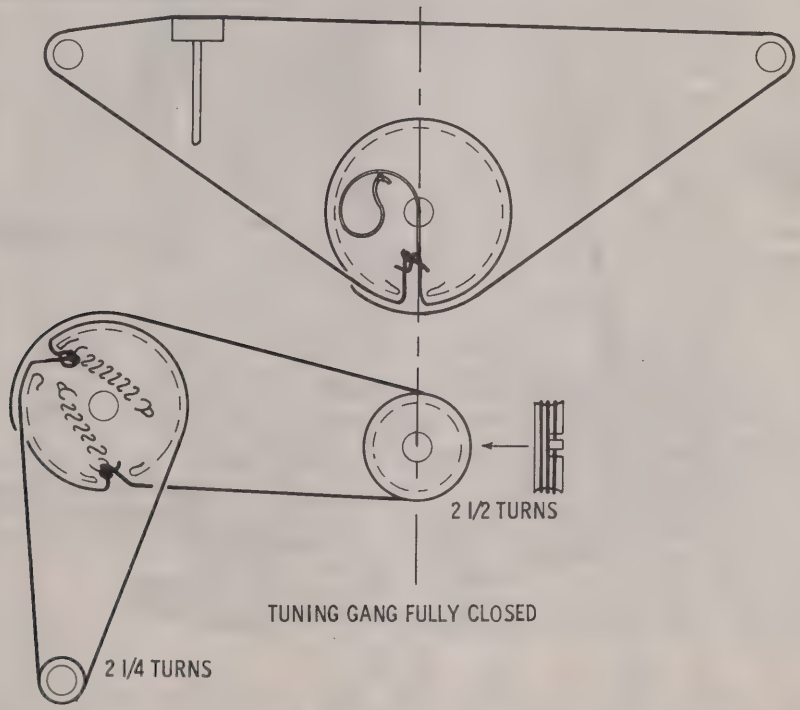
ZENITH MODELS HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)

ZENITH MODELS HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)



TRADE NAME	Zenith Models HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	1.2 Amp. @ 117 Volts AC (130 Watts)
TUNING RANGE—BROADCAST	540 - 1620KC	FREQ. MOD.	88 - 108MC

ZENITH RECORD CHANGER MODEL S-14086



ZENITH MODELS HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)

SET 394 FOLDER 16

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PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R4	5.6Ω		60-56901	
R5	2.2meg		60-22502	
R6	10Ω		60-10001	
R7	68K		60-68301	
R8	68Ω		60-68001	
R9	10K		60-10301	
R10	470Ω		60-47101	
R11	10Ω		60-10001	
R12	2.2meg		60-22502	
R13	100K		60-10401	
R14	10K		60-10301	
R15	15Ω		60-15001	
R16	18K		60-18301	
R17	33K	1	60-33311	
R18	100K		60-10402	
R19	27K	1	60-27311	
R20	1000Ω		60-10202	
R21	68Ω		60-68001	
R22	47K		60-47301	
R23	27K	1	60-27311	
R24	68Ω		60-68001	
R25	2200Ω		60-22202	
R26	100Ω		60-10122	
R27	68Ω		60-68001	
R28	68K		60-68301	
R29	15K		60-15301	
R30	470K		60-47401	

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R31	470K		60-47401	
R32	5.6Ω		60-56901	
R33	2.2meg		60-22502	
R34	470K		60-47402	
R35	1meg		60-10502	
R36	4.7meg		60-47502	
R37	47K		60-47301	
R38	10meg		60-10602	
R39	270K		60-27401	
R40	220K		60-22401	
R41	68K		60-68301	
R42	100K		60-10401	
R43	120K		60-12401	
R44	470Ω		60-47101	
R45	220K		60-22401	
R46	6800Ω		60-68202	
R47	100K		60-10401	
R48	120K		60-12401	
R49	470Ω		60-47101	
R50	220K		60-22401	
R51	100Ω		60-10102	
R52	100Ω		60-10102	
R53	360Ω 5%	2	60-36125	
R54	360Ω 5%	2	60-36125	
R55	2700Ω		60-27201	
R56	900Ω	5	61-17	
R57	33K	2	60-33321	
R58	80Ω 5%	10	61-32	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1A	590VCT @ .125A	5V @ 3A	80-2-6	P9312				22R05 ①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 4.5A									

① Use universal mounting brackets.

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Pilot Lamp	89-15	117V, 7W, Record Changer Compartment
M4	Pilot Lamp	89-7	#47
M5	Dial Lamp	89-7	#47
M6	Dial Lamp	89-7	#47
M7	Tuning Cap	19-20-3	FM-AM, 6 Gang (AM Sections: Ant. 15-485mmf, RF 25-380mmf, Osc. 15-152mmf)
M8	Switch	69-252-0	Band, Rotary Wafer Type

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-738-0	Tuning
Knob	52-737-0	Bass, Treble, On-Off-Loudness, Function
Cabinet	42-43-3	Mahogany, Model 8059A
Cabinet	42-23-3	Mahogany, Model 8059
Cabinet	42-24-3	Limed Oak, Model 8060
Cabinet	42-25-3	Maple, Model 8061
Cabinet	42-44-3	Limed Oak, Model 8060A
Cabinet	42-47-3	Maple, Model 8061A
Cabinet	42-45-3	Walnut, Model 8069A
Dial Pointer	52-13-1	
Dial Scale	67-634-0	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6700Ω CT	6-8Ω	80-24-1	Z1013 ①	A-2905 ①	AU-609	A-2313	24S55	S-57Z	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	15"	PM	6-8Ω	33-319-4 ①	15A10Z6.9	① Phase
SP2	5"	PM	6-8Ω	33-289-4 ①	5A15T	
SP3	5"	PM	6-8Ω	33-289-4 ①	5A15T	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	10-3-1					
L2	FM Mixer Coil	10-24-1					
L3	FM Osc. Coil	10-3-3					
L4	Loop Stick	82-106-0 ①					
L5	AM RF Coil	10-1-1	14-1076 ②		A-5495-RF		
L6	AM Osc. Coil	10-2-4	14-1077	BC-393	71-OSC		
L7	1st FM IF	10-44-2	16-3487	FM-254	1463		
L8	1st AM IF	10-46-2	16-6758	BC-352	12-C1	RF-1	
L9	2nd FM IF	10-44-2	16-3487	FM-254	1463		
L10	2nd AM IF	10-46-2	16-6758	BC-353	12-C2	RF-2	
L11	Ratio Det.	10-15-0	17-3498	FM-255	1465		

① Includes 2.7-32UUF Trimmer, Part #19-180-0.
② Use full secondary.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L12	.125A	195Ω	5 Hy.	80-1-6	C5031 ①	C-2993 ①		C-2303 ①	26C85 ①	C-11X ①

① Drill new mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	33-286-0	53-T	GD-J			

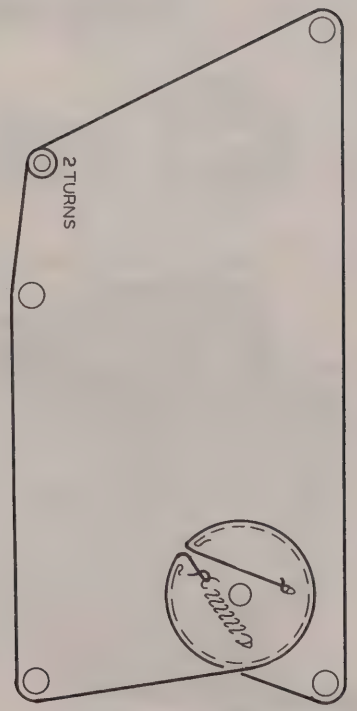
ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M2	83-1178	† S-61 or †♦ S-61SD or ♦ S-61D	† W75TPS or †♦ W75DS or ♦ W75TPD	† Jewel ♦ Diamond

DIAL CORD STRINGING



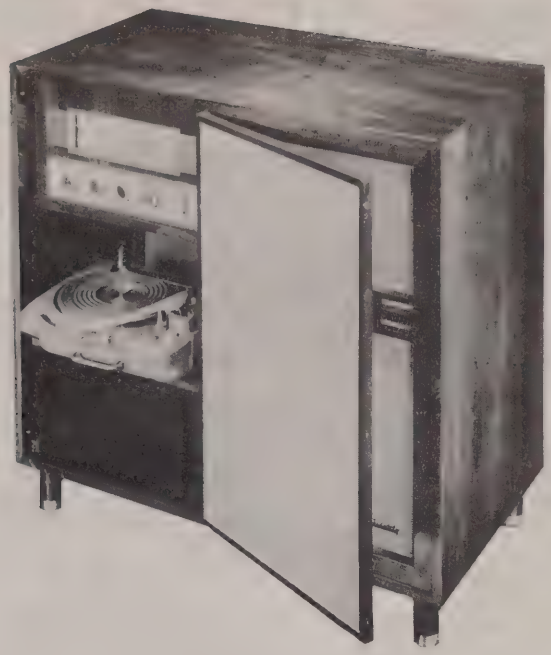
TUNING GANG FULLY CLOSED

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

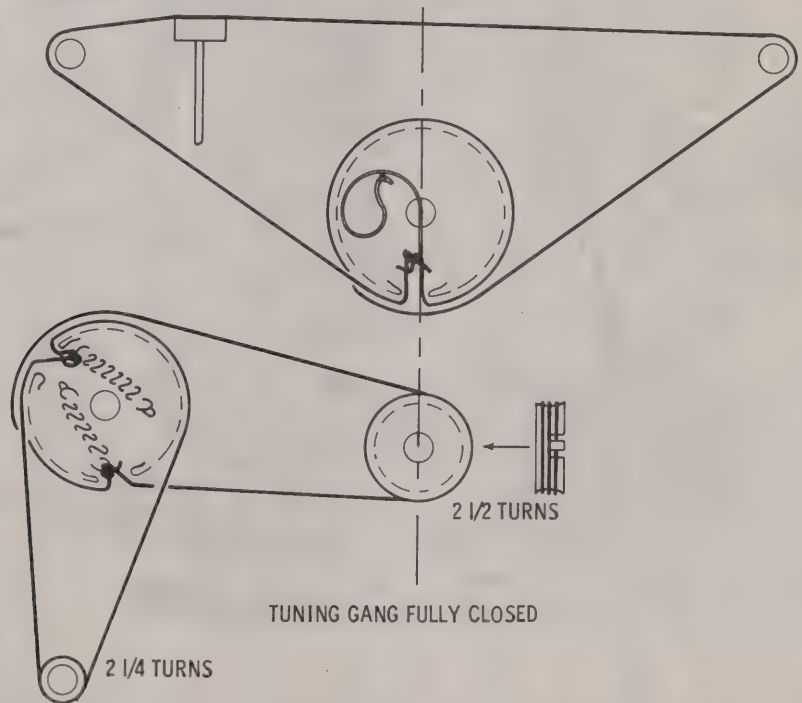
ZENITH MODELS HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)

ZENITH MODELS HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)



TRADE NAME	Zenith Models HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Twelve		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	1.2 Amp. @ 117 Volts AC (130 Watts)
TUNING RANGE—BROADCAST	540 - 1620KC	FREQ. MOD.	88 - 108MC

ZENITH RECORD CHANGER MODEL S-14086



ZENITH MODELS HF1290H, HF1290R, HF1292, HF1292E (Ch. 12Z21)

SET 394 FOLDER 16

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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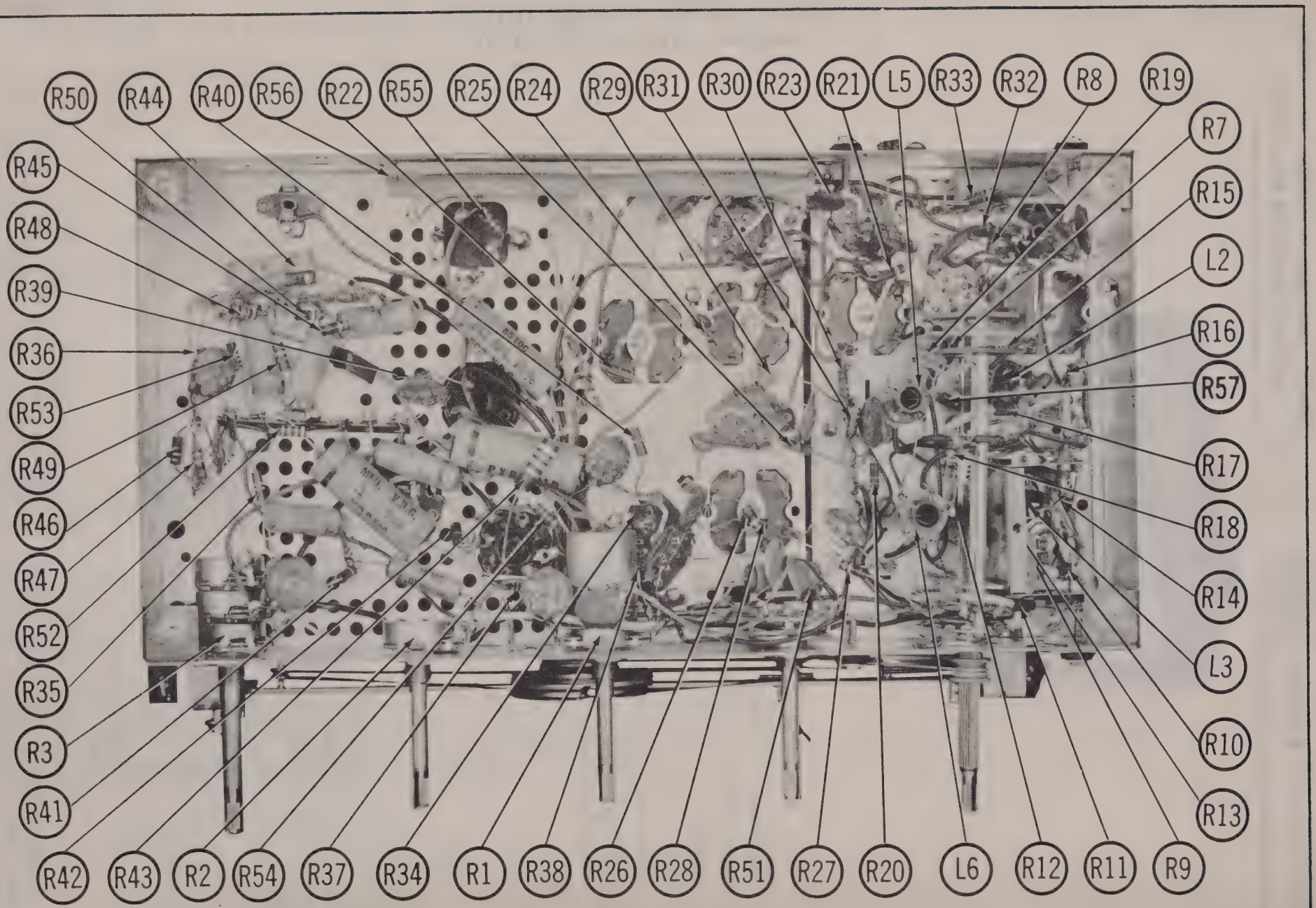
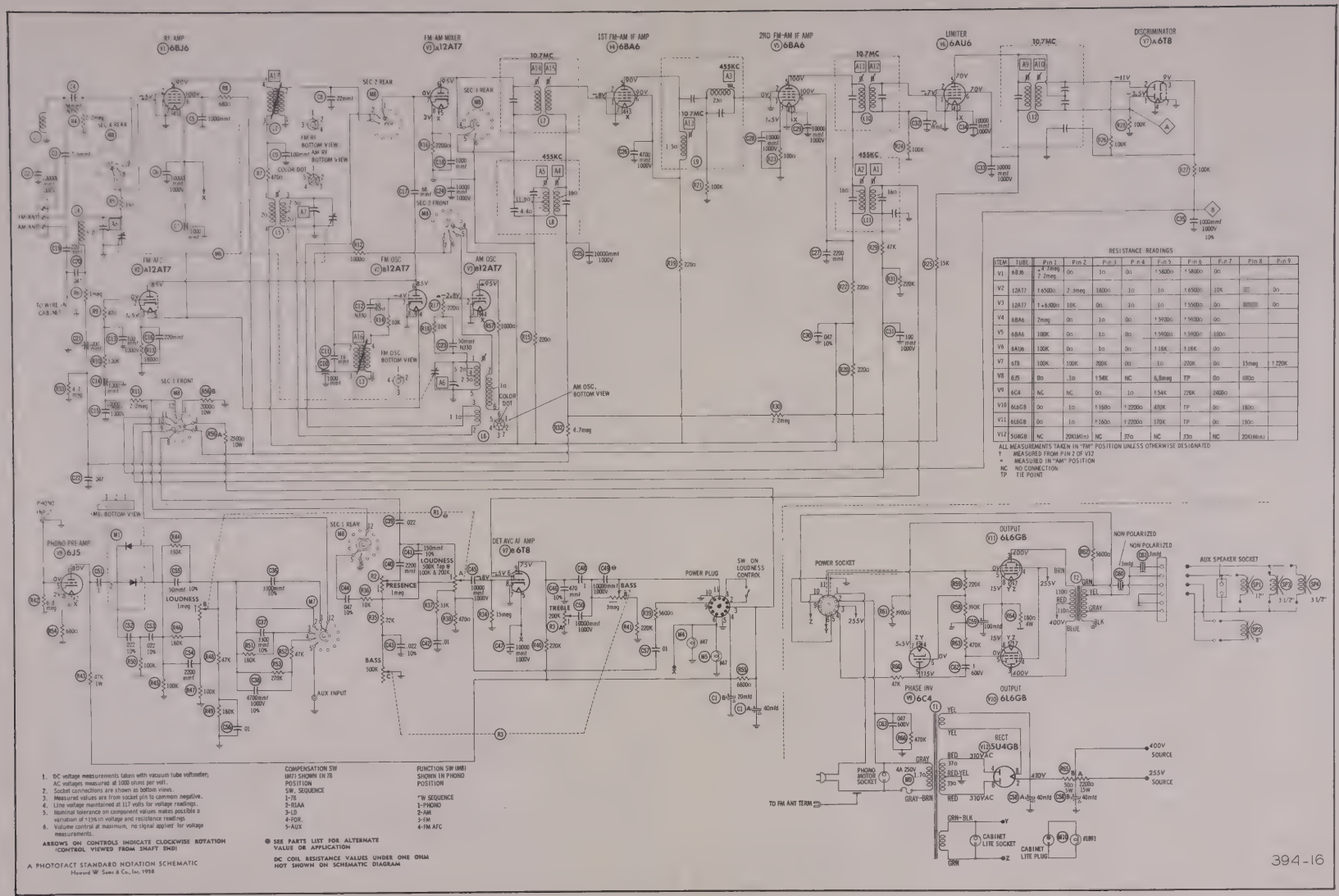
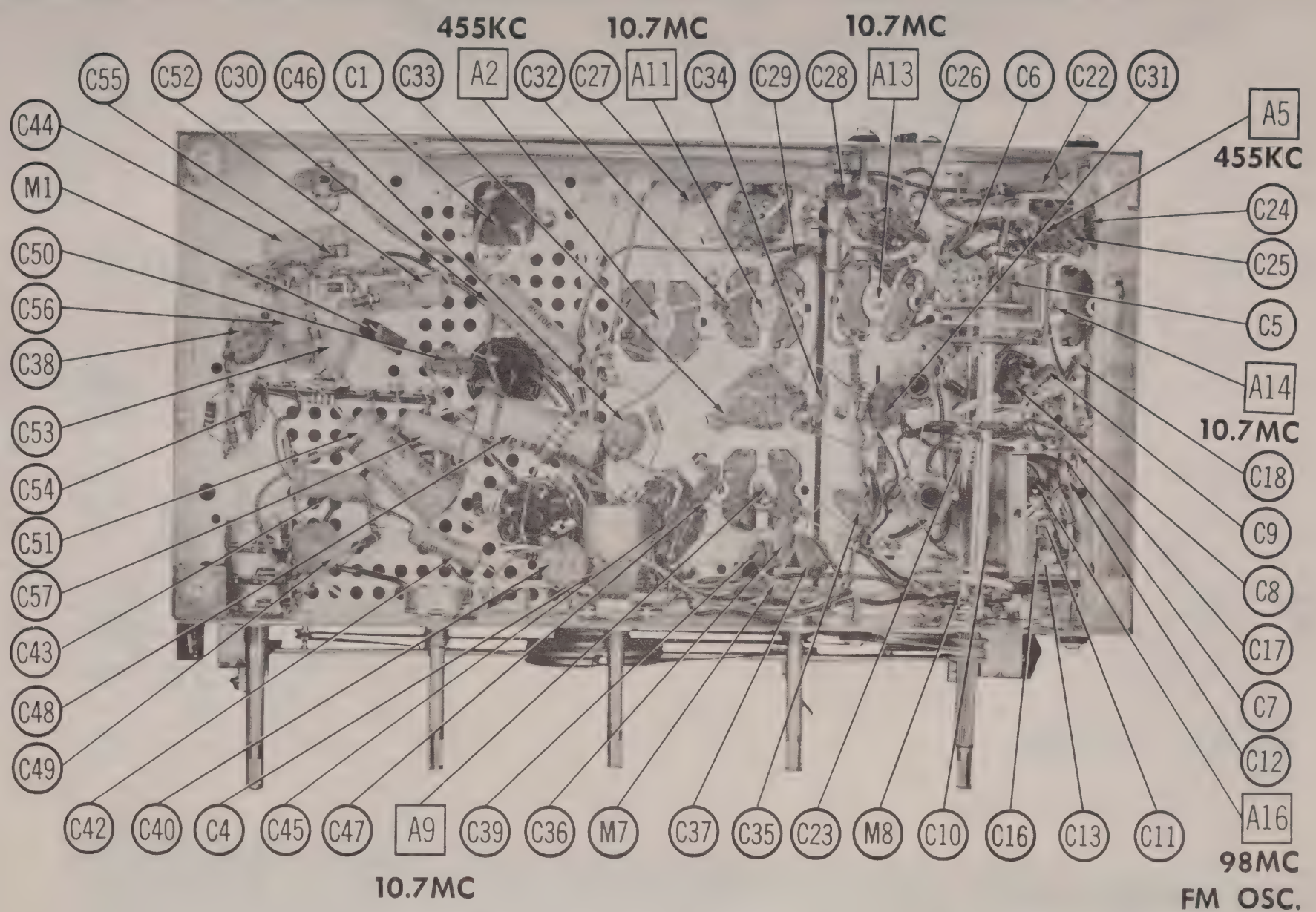


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION


RF AMP V1 6BJ6
FM-AM MIXER V2 12AT7
1ST FM-AM IF AMP V4 6BA6
2ND FM-AM IF AMP V5 6BA6
LIMITER V6 6AU6
DISCRIMINATOR V7 6T8
10.7MC
455KC
FM AFC V3 12AT7
FM OSC V1 12AT7
AM OSC V2 12AT7
SEC 1 REAR
SEC 2 REAR
SEC 1 FRONT
SEC 2 FRONT
FM RF BOTTOM VIEW
AM RF BOTTOM VIEW
FM OSC BOTTOM VIEW
AM OSC BOTTOM VIEW
COLOR DOT
TO WIRE-IN CABINET
FM ANT
AM ANT
RESISTANCE READINGS
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 2 OF V12
* MEASURED IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT
PHONO IN
PHONO PRE-AMP V9 6J5
LOUDNESS
PRESENCE
BASS
AUX INPUT
DET AVC AF AMP V7 6T8
TREBLE
POWER PLUG
SW ON LOUDNESS CONTROL
POWER SOCKET
OUTPUT V11 6L6GB
OUTPUT V10 6L6GB
NON-POLARIZED
AUX SPEAKER SOCKET
PHASE INV V9 6C4
RECT V12 5U4GB
PHONO MOTOR SOCKET
TO FM ANT TERM
400V SOURCE
255V SOURCE
CABINET LITE SOCKET
CABINET LITE PLUG
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
COMPENSATION SW (M7) SHOWN IN 78 POSITION
SW. SEQUENCE
1-78
2-RIAA
3-LD
4-FOR.
5-AUX
FUNCTION SW (M8) SHOWN IN PHONO POSITION
*W SEQUENCE
1-PHONO
2-AM
3-FM
4-FM AFC
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
394-16

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	2.4meg / 2.2meg	0ω	1ω	0ω	†580Ω	†580Ω	0ω		
V2	12AT7	†650Ω	2.3meg	180Ω	1ω	1ω	†650Ω	10K	[illegible]	0ω
V3	12AT7	1 • 6.0Ω	10K	0ω	1ω	1ω	†550Ω	0ω	[illegible]	0ω
V4	6BA6	2meg	0ω	1ω	0ω	†590Ω	†590Ω	0ω		
V5	6BA6	100K	0ω	1ω	0ω	†590Ω	†590Ω	100ω		
V6	6AU6	100K	0ω	1ω	0ω	1.1K	1.1K	0ω		
V7	6T8	100K	100K	200K	0ω	1ω	220K	0ω	15meg	†220K
V8	6J5	0ω	1ω	1.54K	NC	6.8meg	TP	0ω	680ω	
V9	6C4	NC	NC	0ω	1ω	1.54K	220K	240Ωω		
V10	6L6GB	0ω	1ω	†160ω	†220Ωω	470K	TP	0ω	180ω	
V11	6L6GB	0ω	1ω	†160ω	†220Ωω	470K	TP	0ω	180ω	
V12	5U4GB	NC	20K(Min)	NC	37ω	NC	33ω	NC	20K(Min)	



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

ZENITH
MODEL HF1290H (Ch. 12Z21)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set pointer 3 inches from left side of pointer carriage slide.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of 12AT7 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully closed	Across voice coil	A1, A2, A3, A4, A5	Adjust for maximum output.
2.	"	High side to AM antenna terminal. Low side to chassis.	1600KC	"	1600KC	"	A6	"
3.	"	"	1400KC	"	Tune to 1400KC signal	"	A7, A8	Adjust for maximum output. Repeat steps 2 and 3 until no further improvement can be attained.

FM IF ALIGNMENT USING SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.05mfd	High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe thru 1meg to point (A). Common to chassis.	A9	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 1 (grid) of 6BA6 (V5). Low side to chassis.	"	"	"	DC probe thru 1meg to point (A). Common to chassis.	A11, A12	Adjust for maximum deflection.
7.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A13	"
8.	"	High side to pin 7 (grid) of 12AT7 (V3). Low side to chassis.	"	"	"	"	A14, A15	Adjust for maximum deflection. Repeat steps 6, 7 and 8 until no further improvement is obtained.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR & OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05mfd	High side thru pin 1 (grid) of 6AU6 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	High side thru 100K to point (A). Low side to chassis.	A9	Adjust to response curve similar to Fig. 1.
5.	"	"	"	"	"	High side to point (B). Low side to chassis.	A10	Adjust A10 so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude any symmetry of crossover lines.
6.	"	High side to pin 1 (grid) of 6BA6 (V5). Low side to chassis.	"	"	"	High side to point (A). Low side to chassis.	A11, A12	Adjust for response curve similar to Fig. 1.
7.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A13	"
8.	"	High side to pin 7 (grid) of 12AT7 (V3). Low side to chassis.	"	"	"	"	A14, A15	Adjust for response curve similar to Fig. 1. Repeat steps 6, 7 and 8 until no further improvement is obtained.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	98MC (Unmod)	FM	98MC	DC probe to point (A). Common to chassis.	A16 A17	Adjust for maximum deflection.

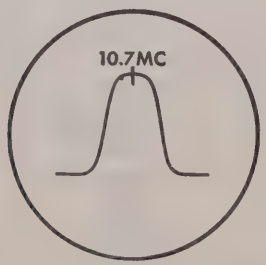


FIG. 1

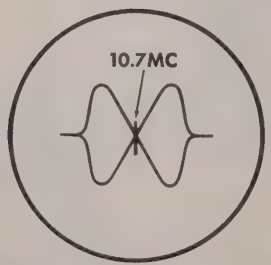


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BJ6	
V2	FM Osc. - FM AFC	12AT7	
V3	FM AM Mixer - AM Osc.	12AT7	
V4	1st FM AM IF Amp.	6BA6	
V5	2nd FM AM IF Amp.	6BA6	
V6	Limiter	6AU6	
V7	Disc. - AM Det. - AVC - AF Amplifier	6T8	
V8	Phono Preamplifier	6J5	

ELECTROLYTIC CAPACITORS

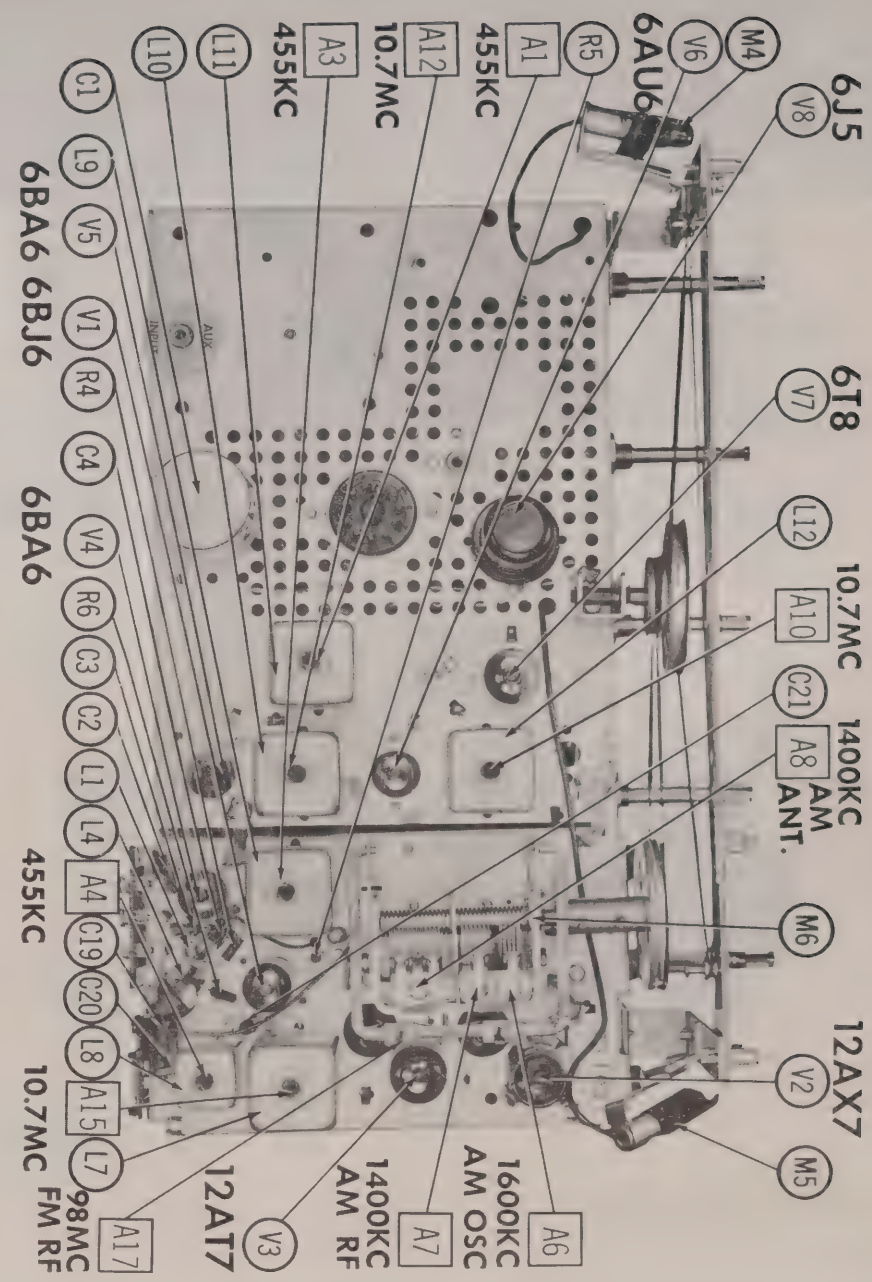
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	22-2686	AFH2-56	B0440	FP376.5	TMD-53	D-230	TVL-2762
B	▲20	450							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C3	7.5		22-1852							
C4	56		22-2927	N750-SI 56	TCN-56	C10Q56U	TC7-56			N750
C5	1000		22-1676	SI 1000	D6-102	LT6D1	GP-1000	UC-521	5HK-D1	
C6	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C7	1000		22-2732	EF-001	MFT-1000				503C-D1	
C8	22		22-1506	SI 22	D6-220	LT6Q22	GP-22	UC-5422	5GA-Q22	
C9	100		22-1669	SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C10	1000		22-2732	ED-001	MFT-1000				503C-D1	
C11	19		22-2630							
C12	50		22-1367							N330
C13	100	1000	22-5	HVD-15-100	DD-101	L10T1	HD15-100		5GA-T1	
C14	1000		22-2732	EF-001	MFT-1000				503C-D1	
C15	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C16	220		22-2321	SI 220	D6-221	LT6T22	GP-220	UC-5322	5GA-T22	
C17	.68		22-1766		TCZ-R68		TCO-.68			
C18	1000		22-1676	SI 1000	D6-102	LT6D1	GP-1000	UC-521	5GA-D1	
C19	220		22-2321	SI 220	D6-221	LT6T22	GP-220	UC-5322	5GA-T22	
C20	.047	200	22-2792	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C21	1000		22-2732	EF-001	MFT-1000				503C-D1	
C22	.047	200	22-2792	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C23	50		22-1367							N330
C24	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C25	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C26	4700	1000	22-14	DAC-8	DD16-502	BYA10D47	HD15-4700	GEM-10247	BL-D50	
C27	2200		22-18	BPD-0022	DD-222	BYA10D22	ED-2200	UC-5222	5GA-D22	
C28	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C29	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C30	.047	600	22-2797							10%
C31	100	1000	22-5	HVD-15-100	DD-101	L10T1	HD15-100		5GA-T1	
C32	25		22-2373	DI-000025	DD-250	L10Q25	ED-25	UC-5425	5GA-Q25	
C33	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C34	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C35	1000	1000	22-17							10%
C36	3300		22-2670			1R5D33	CY20C332K		MS-233	10%
C37	3300		22-2670			1R5D33	CY20C332K		MS-233	10%
C38	4700	1000	22-14					GEM-16247		10%
C39	.022	200	22-2804	P288N-022	DD-203	CUB4S22		GEM-4122	2TM-S22	
C40	2200		22-18	BPD-0022	DD-222	BYA10D22	ED-0022	UC-5222	5GA-D22	
C41	150		22-2875	NPO-DI 150	DD-151	L10T15	ED-150	ZT-5S15	5TCC-T15	10%
C42	.01	200	22-2813	P288N-01	D6-103	CUB2S1	GP-10000	GEM-411	2TM-S1	
C43	.022	200	22-2807					GEM-1612		10%
C44	.047	200	22-2795					GEM-1615		10%
C45	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C46	470	800	22-16							10%
C47	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C48	.1	600	22-2782	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C49	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	Note 1
C50	10000	1000	22-3	DAC-27	DD16-103	BYA10S1		GEM-1011	BL-S10	
C51	.1	600	22-2782	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ZENITH PART No.	JENSEN PART No.	WALCO PART No.	
M3				

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Dial Lamp	100-67	#47
M5	Dial Lamp	100-67	#47
M6	Tuning Cap	22-2944	3 Gang (AM: Ant. 24-380mmf, RF 13-206mmf, Osc. 18-90mmf)
M7	Switch	85-586	Compensator (Rotary, Wafer Type)
M8	Switch	85-585	Function (Rotary, Wafer Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting)..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

AMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V9	Phase Inverter	6C4	
V10	Output	6L6GB	

ITEM No.	USE	TYPE	NOTES
V11	Output	6L6GB	
V12	Rectifier	5U4GB	

PARTS LIST AND DESCRIPTIONS (Continued)

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C58A	▲40	475	22-2581	AFH2-72	B0530	FP396.1	TMD-62	D-275	TVL-2830
B	▲40	475							
C59	100	50	22-2580	PRS50V100	BR1005	TC3501	TD-100-50	MTH-5010	TVA-1310
C60	3	30NP	22-2945	NP-PRS50V4	BBR5-50 †	TC30 †	TD-5-50 †	MT-0504 †	
					BBR5-50	TC30	TD-5-50 †	MT-0504 †	
C61	3	30NP	22-2945	NP-PRS50V4	BBR5-50 †	TC30 †	TD-5-50 †	MT-0504 †	
					BBR5-50	TC30	TD-5-50	MT-0504	

† Connect negative leads together

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C62	.1	600	22-2782	P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C63	.047	600	22-2569	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R58	390K		63-1894	
R59	220K		63-1883	
R60	47K		63-1855	
R61	3900Ω		63-1810	
R62	5600Ω		63-1817	

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R63	470K		63-1897	
R64	180Ω		63-3211	
R65A	2200Ω	15	63-3981	
B	50Ω	5		
R66	470K		63-1898	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.2A	740VCT @ .160A	5V @ 3A	95-1394	P9402	P-3173		PC8412	22R33	R-20A
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 4.6A									

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C52	.022	200	22-2807					GEM-1612		10%
C53	.022	200	22-2807					GEM-1612		10%
C54	2200		22-18	BPD-0022	DD-222	BYA10D22	ED-0022	UC-5222	5GA-D22	
C55	50		22-1367	NPO-SI 50	DD-500	L10Q5	ED-50	ZT-545	5TCC-Q5	10%
C56	.01	200	22-2813	P288N-01	D6-103	CUB2SI	GP-10000	GEM-411	2TM-SI	
C57	.01	400		P488N-01	D6-103	CUB4SI	GP-10000	GEM-411	4TM-SI	

Note 1. Some versions use 1500mmf in this application (Part #22-12).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	63-4042 ①					Loudness, Tap @ 100K & 200K
B	1meg	½						Loudness
C	Switch							
R2	1meg	½	63-3978	B-68		Q17-137	U52	Presence
R3A	200K	½	63-3980					Treble
B	3meg	½						Bass
C	500K	½						Bass

① Part #63-3979 used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R4	2.2meg		63-1926	
R5	33Ω		63-1723	
R6	1meg		63-1912	
R7	470Ω		63-1772	
R8	680Ω		63-1779	
R9	47Ω		63-1730	
R10	100K		63-1869	
R11	2.2meg		63-1926	
R12	1000Ω		63-1786	
R13	1800Ω		63-1796	
R14	10K		63-1827	
R15	220Ω		63-1758	
R16	2200Ω		63-1800	
R17	220Ω		63-1758	
R18	10K		63-1827	
R19	220Ω		63-1758	
R20	220Ω		63-1758	
R21	100K		63-1870	
R22	220Ω		63-1758	
R23	100Ω		63-1743	
R24	100K		63-1870	
R25	15K		63-1835	
R26	100K		63-1869	
R27	100K		63-1869	
R28	100K		63-1869	
R29	47K		63-1855	
R30	2.2meg		63-1926	
R31	220K		63-1883	
R32	4.7meg		63-1940	
R33	4.7meg		63-1940	
R34	15meg		63-1961	
R35	22K		63-1841	
R36	10K		63-1827	
R37	33K		63-1848	
R38	470Ω		63-1772	
R39	5600Ω			
R40	220K		63-1884	
R41	220K		63-1884	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R42	6.8meg		63-1947	
R43	47K	1	63-1194	
R44	330K		63-1890	
R45	100K		63-1869	
R46	180K		63-1880	
R47	100K		63-1869	
R48	47K		63-1855	
R49	180K		63-1880	
R50	100K		63-1869	
R51	180K		63-1880	
R52	47K		63-1855	
R53	270K		63-1887	
R54	680Ω		63-1778	
R55	6800Ω		63-1820	
R56A	2500Ω	10	63-3974	
B	2000Ω	10		
R57	1000Ω		63-1785	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	20-355					1 Microhenry
L2	FM RF Trans	S-15743					
L3	FM Osc. Coil	S-15691					
L4	AM Ant. Coil	S-18812	19-4201	TV-197	6154		207 Microhenries
L5	AM RF Trans.	S-41088					
L6	AM Osc. Coil	S-41087					
L7	1st FM IF	95-1150	16-3487 *	FM-251 ▲	1451 ▲		
L8	1st AM IF	95-1549					
L9	2nd FM IF	95-1251					
	2nd AM IF						
L10	3rd FM IF	95-1150	16-3487 *	FM-251 ▲	1451 ▲		
L11	3rd AM IF	95-1102	16-6770 *	BC-355 *	12-C6 *		
L12	Discr. Trans.	95-1153					

▲ Enlarge mounting holes. * Use adapter plate.

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	Signal	63-3977 ①				① Dual selenium type used as a varistor

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA ZENITH PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	142-76 ①					① Includes Needles

AMP **PARTS LIST AND DESCRIPTIONS (Continued)**

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7700Ω CT	16Ω Tap@ 8Ω, 4Ω	95-1395	Z1405	A-3130		A-3885	22S66	S-60A	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	49-817	12A10PA	
SP2	8"	PM	19Ω	49-816	8A3IZ19	
SP3	3½"	PM	12Ω	49-759	3A15T	
SP4	3½"	PM	12Ω	49-759	3A15T	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M9	3 AG	4A 250V	136-31	62-17	312004. (3AG 4A 250V)	342001	MTH 4	HKP

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M10	Pilot Lamp	100-189	#1891

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

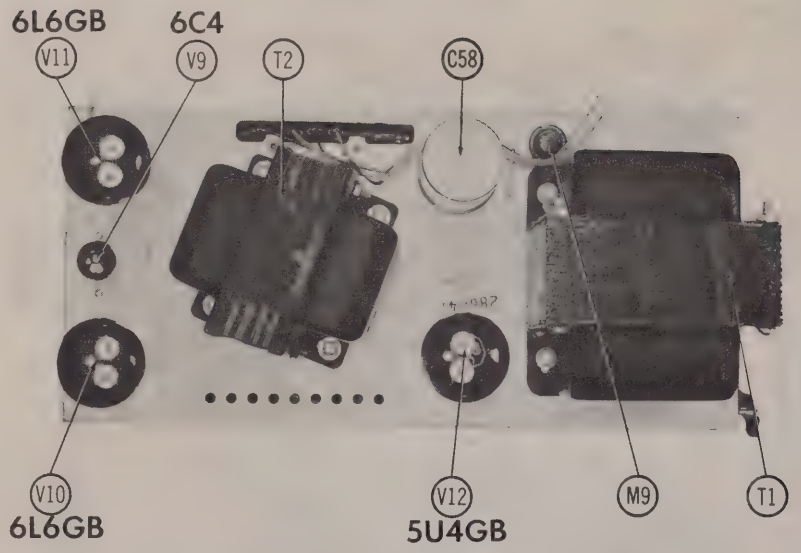
NAME	PART NO.	DESCRIPTION
Knob	46-1357	Bandswitch, Record Compensator, Loudness, Treble; Models HF1292, E, HF1290H
Knob	46-1020	Bandswitch, Record Compensator, Loudness, Treble; Model HF1290R
Knob	46-1639	Tuning
Knob	46-1642	Bass, Models HF1292, E, HF1290H
Knob	46-1641	Bass, Model HF1290R
Knob	46-1686	Presence
Cabinet	14-2305	Model HF1292
Cabinet	14-2123H	Model HF1290H
Cabinet	14-2123R	Model HF1290R
Cabinet	14-2305E	Model HF1292E

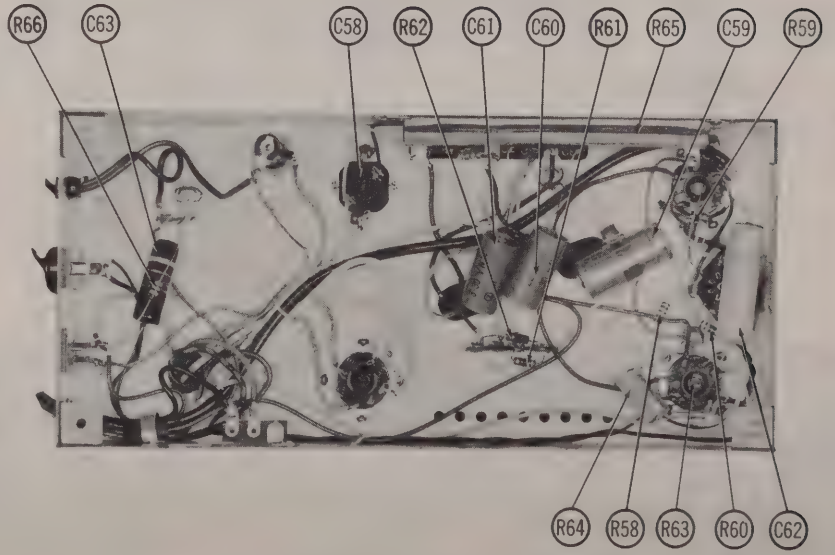
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

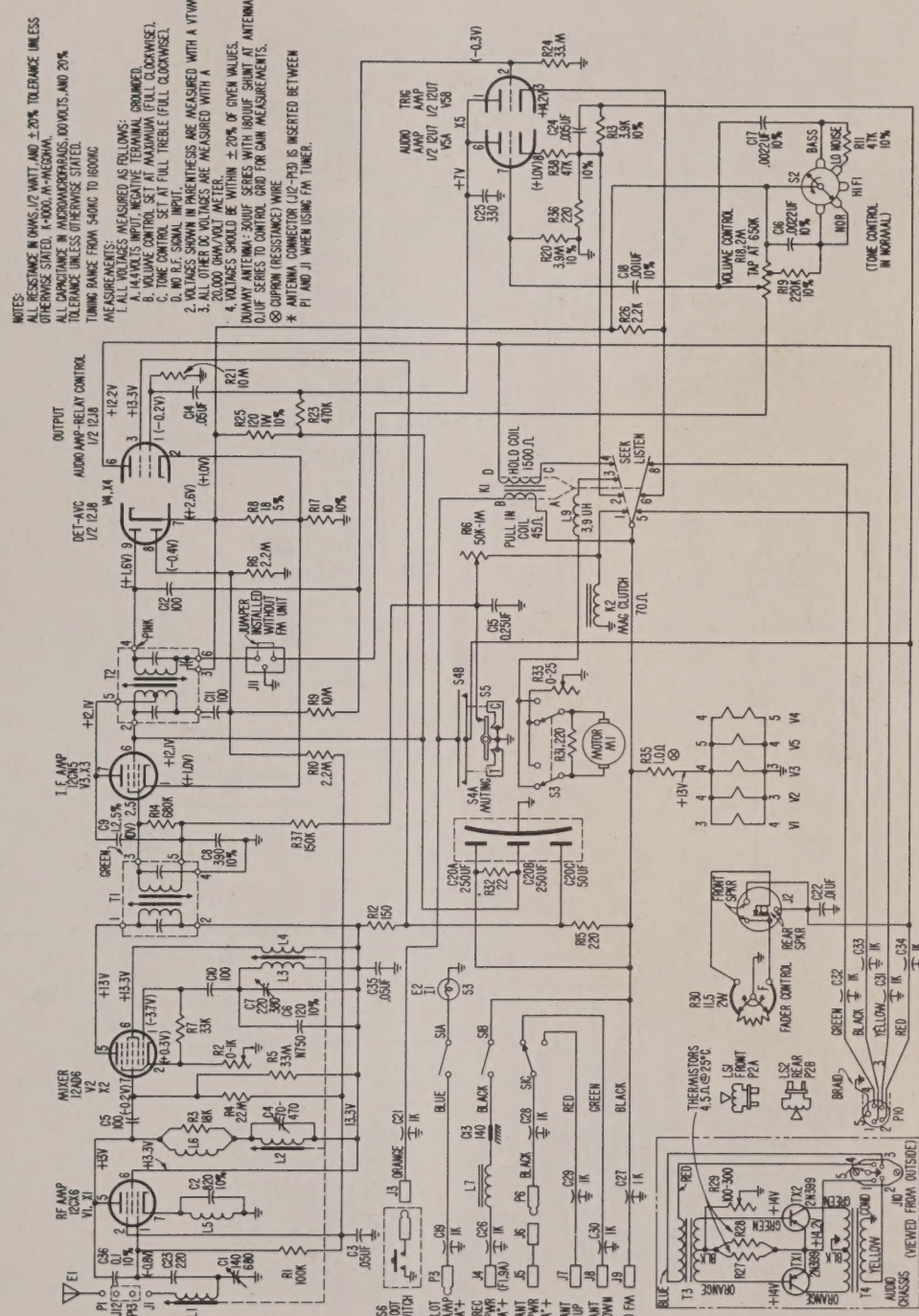
AMP CHASSIS —TOP VIEW





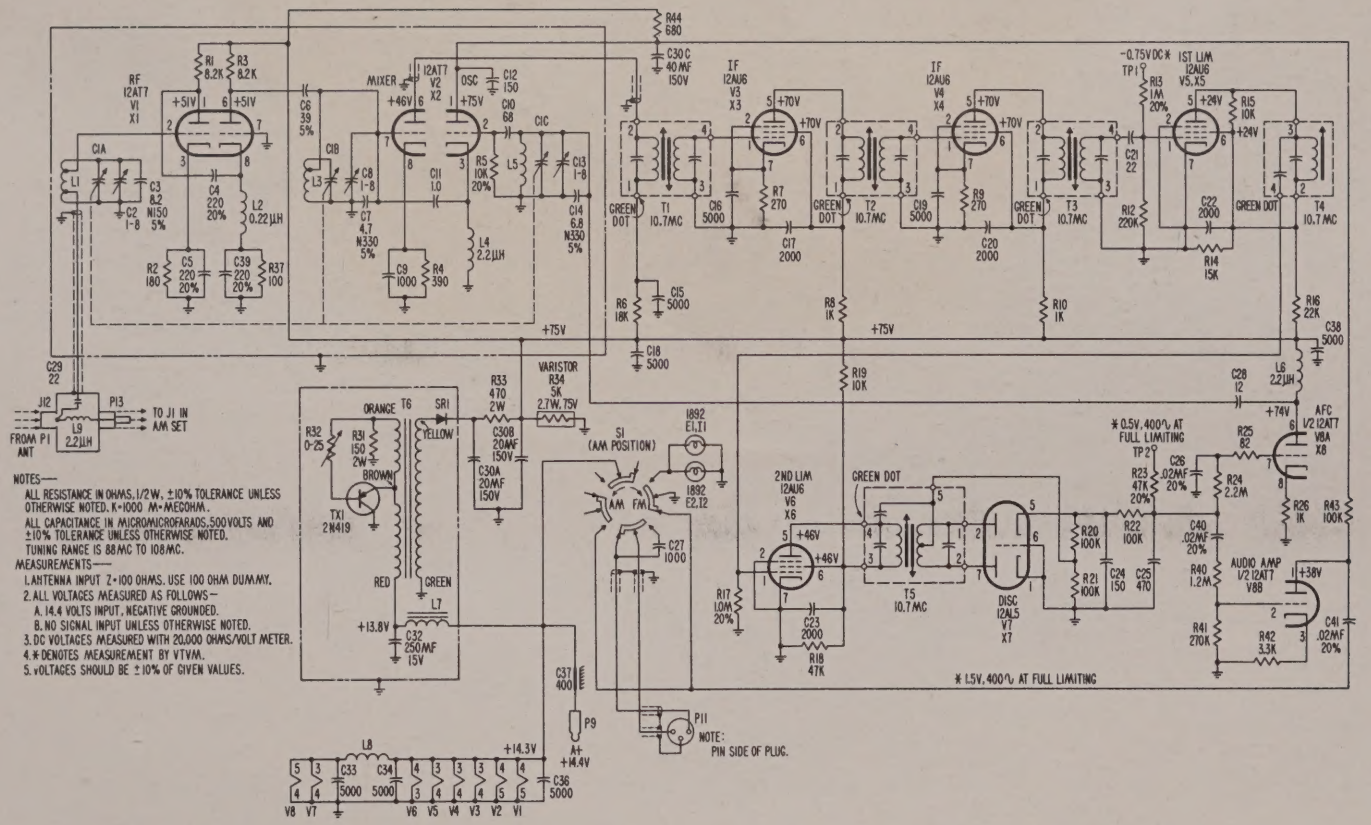
AMP CHASSIS—**BOTTOM VIEW**

LINCOLN MODEL 85BH (FFC-18805-C, -D)


NOTES:
ALL RESISTANCE IN OHMS, 1/2 WATT, AND ± 20% TOLERANCE UNLESS OTHERWISE STATED. K=1000, M=MEGOHM.
ALL CAPACITANCE IN MICROMICROFARADS, 100 VOLTS, AND 20% TOLERANCE UNLESS OTHERWISE STATED.
TUNING RANGE FROM 540KC TO 1600KC
MEASUREMENTS:
1. ALL VOLTAGES MEASURED AS FOLLOWS:
A. 14.4 VOLTS INPUT, NEGATIVE TERMINAL GROUNDED.
B. VOLUME CONTROL SET AT MAXIMUM (FULL CLOCKWISE).
C. TONE CONTROL SET AT FULL TREBLE (FULL CLOCKWISE).
D. NO R.F. SIGNAL INPUT.
2. VOLTAGES SHOWN IN PARENTHESIS ARE MEASURED WITH A VTVM.
3. ALL OTHER DC VOLTAGES ARE MEASURED WITH A 20,000 OHM/VOLT METER.
4. VOLTAGES SHOULD BE WITHIN ± 20% OF GIVEN VALUES, DUMMY ANTENNA: 300UF SERIES WITH 180UF SHUNT AT ANTENNA; 0.1UF SERIES TO CONTROL GRID FOR GAIN MEASUREMENTS.
⊗ CUPRON (RESISTANCE) WIRE
* ANTENNA CONNECTOR (J12-P3) IS INSERTED BETWEEN P1 AND J1 WHEN USING FM TUNER.
RF AMP 12CK6 V1, V1
MIXER 12AD6 V2
OSC 12AD7 V2
I.F. AMP 12CN5 V3
DET-AVC V2 12J8
AUDIO AMP-RELAY CONTROL V2 12J8
AUDIO AMP V2 12QT V5A
TRIG AMP V2 12QT V5B
OUTPUT
HOLD COIL 1500Ω
PULL IN COIL 45Ω
MAG CLUTCH 70Ω
SEEK
LISTEN
MOTOR M1
FRONT SPKR
REAR SPKR
FADER CONTROL R30 1.5K 2W
THERMISTORS 4.5Ω @ 25°C
LS1 FRONT P2A
LS2 REAR P2B
VOLUME CONTROL R18 2.2M TAP AT 650K
TONE CONTROL (IN NORMAL)
BASS
LO NOISE
HI FI
AUDIO CHASSIS (VIEWED FROM OUTSIDE)
FOOT SWITCH
PILOT LAMP
REC PWR
ANT PWR
ANT UP
ANT DOWN
TO FM

Schematic Diagram Courtesy of Bendix Radio Div., Bendix Aviation Corp.

LINCOLN MODEL 88BH (FFC-15491-B)

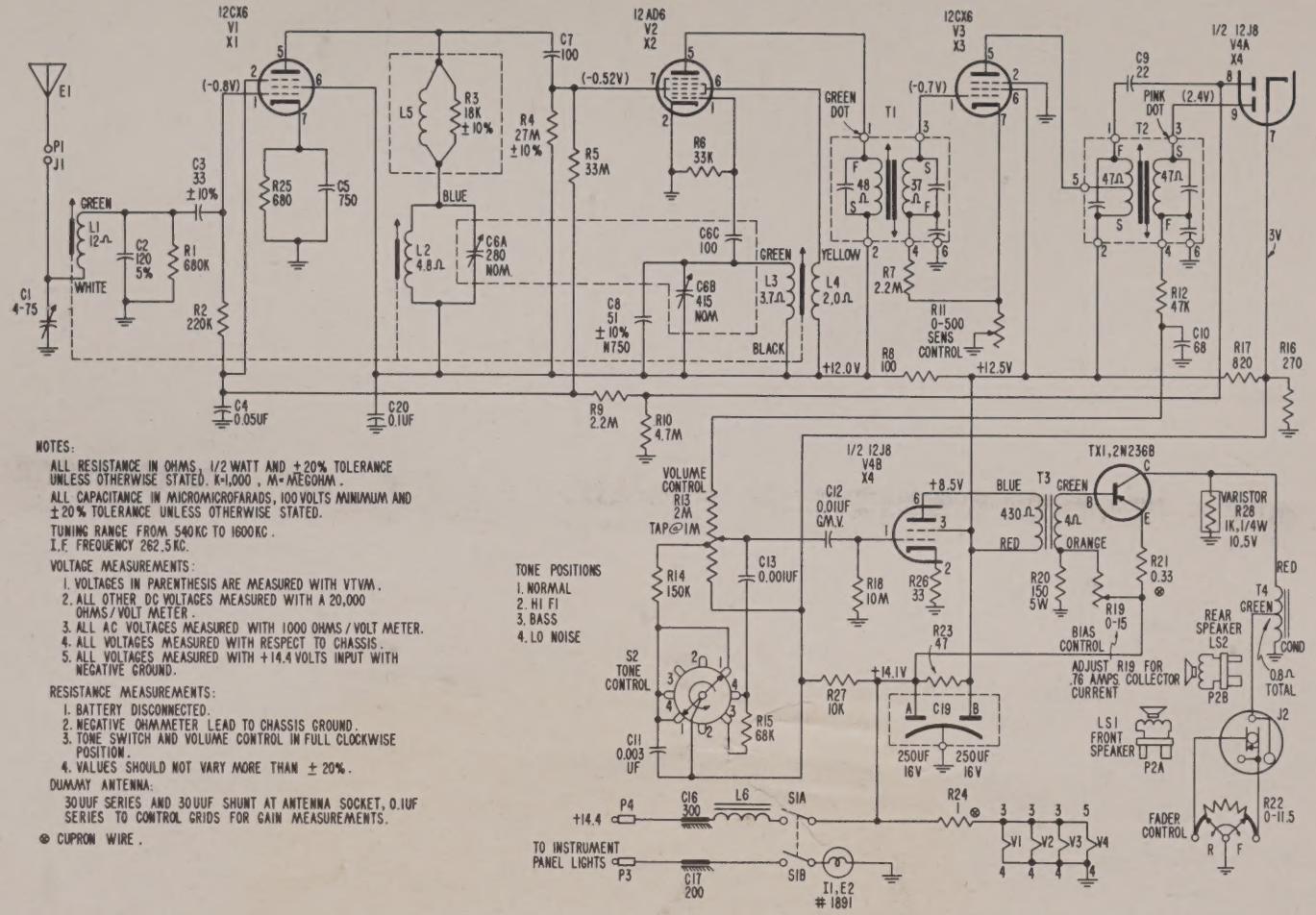


NOTES—
ALL RESISTANCE IN OHMS, 1/2 W, ±10% TOLERANCE UNLESS OTHERWISE NOTED. K=1000 M=MEGOHM.
ALL CAPACITANCE IN MICROMICROFARADS, 500 VOLTS AND ±10% TOLERANCE UNLESS OTHERWISE NOTED.
TUNING RANGE IS 88 MC TO 108 MC.

MEASUREMENTS—
1. ANTENNA INPUT Z=100 OHMS. USE 100 OHM DUMMY.
2. ALL VOLTAGES MEASURED AS FOLLOWS—
   A. 14.4 VOLTS INPUT, NEGATIVE GROUNDED.
   B. NO SIGNAL INPUT UNLESS OTHERWISE NOTED.
3. DC VOLTAGES MEASURED WITH 20,000 OHMS/VOLT METER.
4. * DENOTES MEASUREMENT BY VTVM.
5. VOLTAGES SHOULD BE ±10% OF GIVEN VALUES.

Schematic Diagram Courtesy of Bendix Radio Div., Bendix Aviation Corp.

MERCURY MODEL 84BM (FEW-18805-U)



NOTES:

ALL RESISTANCE IN OHMS, 1/2 WATT AND ±20% TOLERANCE UNLESS OTHERWISE STATED. K=1,000 , M=MEGOHM .

ALL CAPACITANCE IN MICROMICROFARADS, 100 VOLTS MINIMUM AND ±20% TOLERANCE UNLESS OTHERWISE STATED.

TUNING RANGE FROM 540KC TO 1600KC .
I.F. FREQUENCY 262.5KC.

VOLTAGE MEASUREMENTS:

1. VOLTAGES IN PARENTHESIS ARE MEASURED WITH VTVM.
2. ALL OTHER DC VOLTAGES MEASURED WITH A 20,000 OHMS/VOLT METER.
3. ALL AC VOLTAGES MEASURED WITH 1000 OHMS/VOLT METER.
4. ALL VOLTAGES MEASURED WITH RESPECT TO CHASSIS.
5. ALL VOLTAGES MEASURED WITH +14.4 VOLTS INPUT WITH NEGATIVE GROUND.

RESISTANCE MEASUREMENTS:

1. BATTERY DISCONNECTED.
2. NEGATIVE OHMMETER LEAD TO CHASSIS GROUND.
3. TONE SWITCH AND VOLUME CONTROL IN FULL CLOCKWISE POSITION.
4. VALUES SHOULD NOT VARY MORE THAN ±20%.

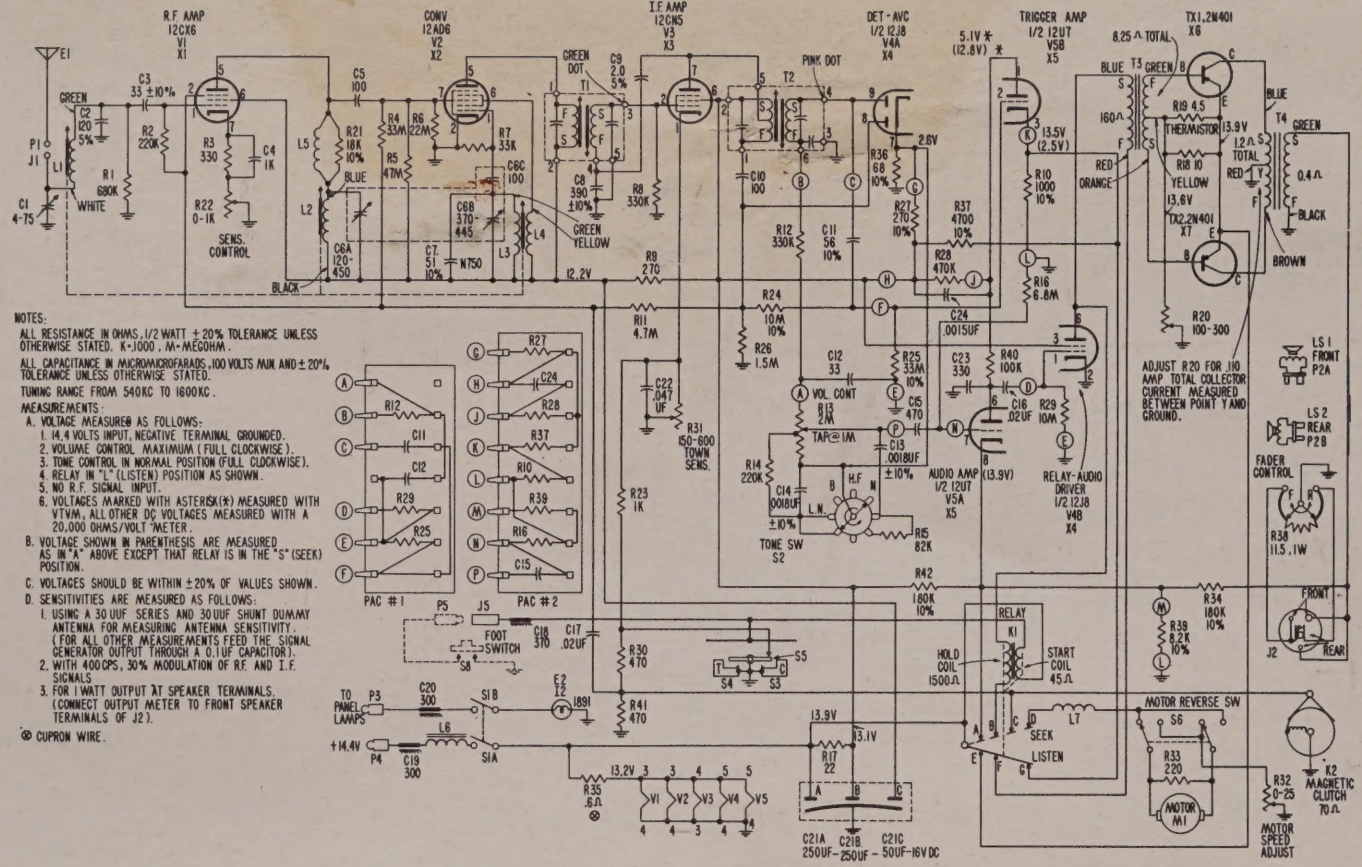
DUMMY ANTENNA:

30UUF SERIES AND 30UUF SHUNT AT ANTENNA SOCKET, 0.1UF SERIES TO CONTROL GRIDS FOR GAIN MEASUREMENTS.

⊛ CUPRON WIRE.

Schematic Diagram Courtesy of Bendix Radio Div., Bendix Aviation Corp.

MERCURY MODEL 85BM (FEW-18805-T)



NOTES:

ALL RESISTANCE IN OHMS, 1/2 WATT ± 20% TOLERANCE UNLESS OTHERWISE STATED. K=1000, M=MEGOHM.

ALL CAPACITANCE IN MICROMICROFARADS, 100 VOLTS MIN AND ± 20% TOLERANCE UNLESS OTHERWISE STATED.

TUNING RANGE FROM 540KC TO 1600KC.

MEASUREMENTS:

A. VOLTAGE MEASURED AS FOLLOWS:
1. 14.4 VOLTS INPUT, NEGATIVE TERMINAL GROUNDED.
2. VOLUME CONTROL MAXIMUM (FULL CLOCKWISE).
3. TONE CONTROL IN NORMAL POSITION (FULL CLOCKWISE).
4. RELAY IN "L" (LISTEN) POSITION AS SHOWN.
5. NO R.F. SIGNAL INPUT.
6. VOLTAGES MARKED WITH ASTERISK(*) MEASURED WITH VTVM, ALL OTHER DC VOLTAGES MEASURED WITH A 20,000 OHMS/VOLT METER.

B. VOLTAGE SHOWN IN PARENTHESIS ARE MEASURED AS IN "A" ABOVE EXCEPT THAT RELAY IS IN THE "S" (SEEK) POSITION.

C. VOLTAGES SHOULD BE WITHIN ± 20% OF VALUES SHOWN.

D. SENSITIVITIES ARE MEASURED AS FOLLOWS:
1. USING A 30 UUF SERIES AND 30 UUF SHUNT DUMMY ANTENNA FOR MEASURING ANTENNA SENSITIVITY. (FOR ALL OTHER MEASUREMENTS FEED THE SIGNAL GENERATOR OUTPUT THROUGH A 0.1 UF CAPACITOR).
2. WITH 400 CPS, 30% MODULATION OF R.F. AND I.F. SIGNALS.
3. FOR 1 WATT OUTPUT AT SPEAKER TERMINALS. (CONNECT OUTPUT METER TO FRONT SPEAKER TERMINALS OF J2).

⊗ CUPRON WIRE.

Schematic Diagram Courtesy of Bendix Radio Div., Bendix Aviation Corp.